Engineering Library

OCT 1 3 1943

THE NATIONAL TELEPHONE MAGAZINE

TELEPHONE ENGINEER AND Management

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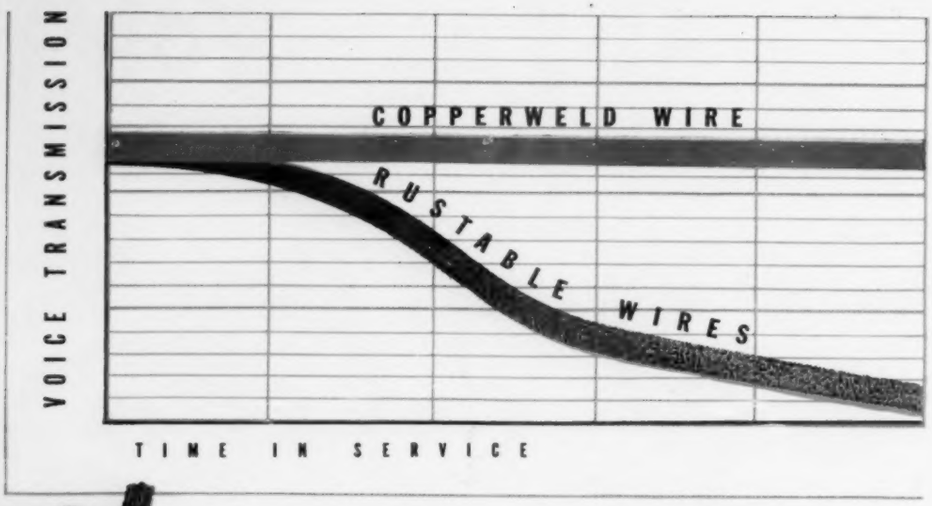
OCTOBER 1943



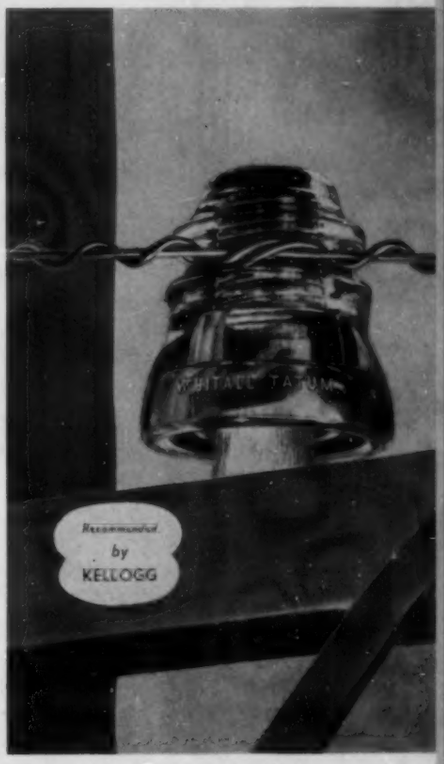
Rust IS THE ENEMY OF GOOD VOICE TRANSMISSION

All properly engineered, well-constructed telephone lines have good voice transmission *when new;* but if they are built of rustable wires, the quality of the voice transmission goes down as rust goes to work. Rust hits first by developing noisy high resistance joints and splices, even before the damage is noticeable on the wire.

On lines built with Copperweld wire, the quality of voice transmission is permanently good. Copperweld's thick exterior of copper, permanently molten-welded to the steel core, not only provides greater voice transmission but also protects the wire from the constant attack of rust. The combination of steel and copper in Copperweld wire provides permanent strength and conductivity.

COPPERWELD WIRE IS Non-Rusting

Churchill Cabinet Co. Folks like privacy—and comfort—when they phone. Churchill Folding Door Booths provide both. The No. 100 Booth comes with electric automatic ventilator and electric light as standard equipment. No wonder they are real business producers!



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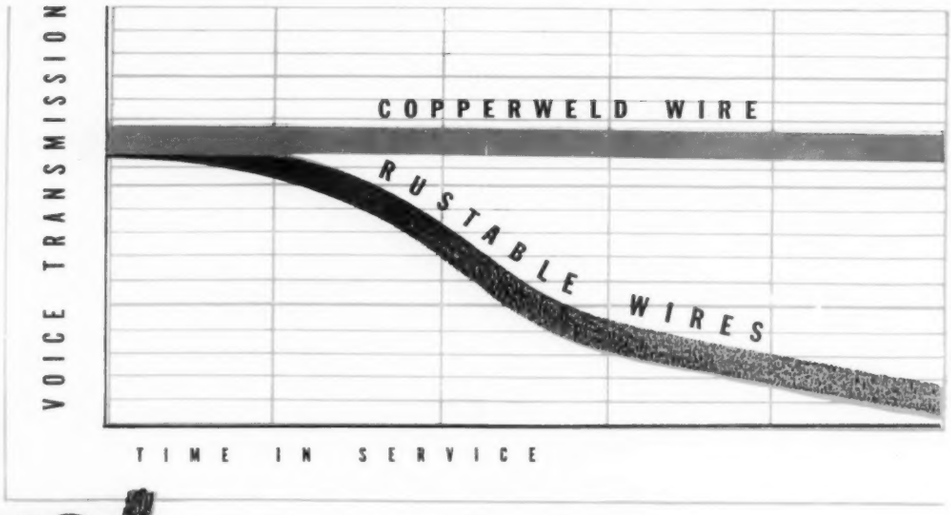
ORDER YOUR TELEPHONE LINE SUPPLIES FROM

KELLOGG

SWITCHBOARD AND SUPPLY CO., CHICAGO



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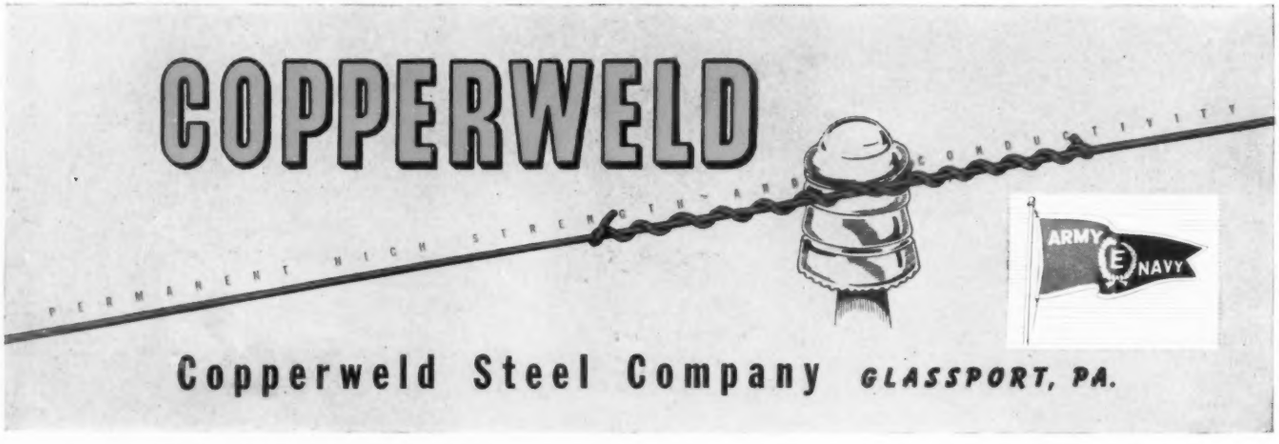


Copperweld Steel Company *GLASSPORT, PA.*

TELEPHONE DIRECTORY ADVERTISING *SAVES TIME, GASOLINE & TIRES IN TELLING EVERYONE WHERE TO BUY ANYTHING ANYTIME—ANYWHERE

L. M. BERRY & CO.

Selling Telephone Directory Advertising in over 3200 Cities and Towns in the United States and Canada.

Main Office—Telephone Building, Dayton, Ohio

Canadian Office—Telephone Bldg., Winnipeg, Man.

* The Telephone Industry has effected in 1943 important savings in the amount of paper used to produce directories.

YOURS...
to
U-3 Preference Rating Order Replaces P-130
The new U-3 Order grants a higher rating of AA-1 to operating companies in order to secure repair and maintenance material. It also grants a CMP allotment symbol of MRO-U for cable, wire and strand.
It defines "operators inventory of material" as that which shall include all items of new and/or used material and supplies on hand, whether held for current use or for sale as junk, until physically incorporated into plant by way of maintenance, repair, construction or otherwise. Here are six exceptions which are:
Kellogg Surplus Inventory Reduction Service.
The Soldier without a Uniform
War Highlights the Vital Services Performed by Telephone Operators
YOUR TELEPHONE SPEAKS
TELEPHONE DIRECTORY
New Personal Phone Directory for Subscriber's Use.
Fine, Colorful "Stay on the Job" Victory Posters.
Re-enlist Your Veteran Telephones and Equipment
Use this KELLOGG Rebuilding and Repair Service Catalog No. 200
Kellogg Outside Plant Engineering Service.
THE KELLOGG NAME YOU KNOW
Kellogg Expanded Rebuilding and Repair Service.
Capacitors—Wax and Oil
Multi-contact Plugs and
Head and Chest Sets

--FOR EFFICIENT WARTIME SERVICE

A Report of the Numerous Kellogg Contributions to the Independent Industry Since Last Year's Convention

As Independent telephone men gather for their second war time national convention, it's a good time to review the record of the past 12 months—and to take a look at the future.

October, 1943, finds this Nation carrying the battle to the very heart of the Axis. Independent telephone men, not given to self-congratulation, would belittle their part in the past year's struggle to Victory. BUT THEIR RECORD SPEAKS FOR ITSELF! It's a stirring record of giving efficient telephone service in spite of growing material and personnel shortages . . . of vital lines kept open for the urgent business of war.

Kellogg's job during the past 12 months, in addition to night-and-day production of military communication equipment, has been to give you every possible aid. Kellogg field representatives and the personnel of the home office and branch houses are constantly putting THEIR heads together on YOUR problems. Some of the results are shown here. These services, each developed to meet a specific need, are evidence of Kellogg's desire to help you in every possible way. You can be sure that during the year ahead, Kellogg will continue to be of the greatest assistance to you in your fight to maintain efficient service.

Latest Addition

. . . to the list of Kellogg aids is "Your Telephone Speaks," a miniature personal phone directory for your subscribers. Available with your company name printed on the front, at a cost not exceeding one cent each! Urges subscribers to aid the war effort by eliminating breakage of telephone instruments through careful and thoughtful handling.

Right Down Your Alley

. . . is the Kellogg Surplus Inventory Service, to help you buy or sell surplus equipment. If you NEED materials, Kellogg can give you names of companies which have surplus supplies for sale. If you HAVE equipment to sell, Kellogg may be able to use it for rebuilding purposes.

Striking a New Note

. . . is Kellogg's Rebuilding and Repair Service. Thousands of companies during the past year received the new complete Kellogg Rebuilding Catalog, giving all details on the kind of work you want . . . and the quality that's backed by a written guarantee!

First in the Field

. . . with a campaign that emphasizes the essential services performed by loyal telephone workers. This program was initiated in telephone trade journals and is currently being extended in the form of colorful, dramatic posters furnished free to all Independent telephone companies.

Have You Used It?

. . . Kellogg's new Outside Plant Engineering Service is offered to telephone men who want expert counsel on problems connected with the engineering, construction and maintenance of outside plant. These extra, specialized "brains" are available to you.

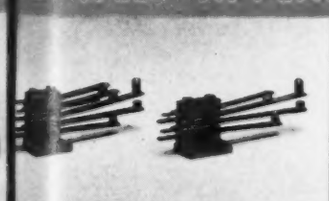
Still Going Strong

. . . are these Kellogg Services: personal advice of technically trained Field Representatives on problems involving assistance on planning, installing and financing of essential telephone and switchboard projects . . . Assistance on Practical Maintenance Practices . . . Kellogg Priorities Service to help you secure materials and supplies you urgently need, etc.

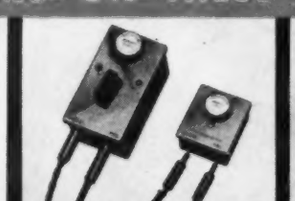
KELLOGG

SWITCHBOARD & SUPPLY CO.
6650 So. Cicero Avenue
Chicago 38, Ill.

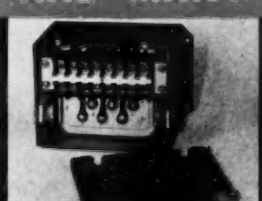
SO WELL APPEARS ON THESE AND MANY OTHER MILITARY PRODUCTS . . .



Band Switches

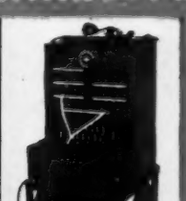


Volume Controls



Noise Filters

Throat Microphones



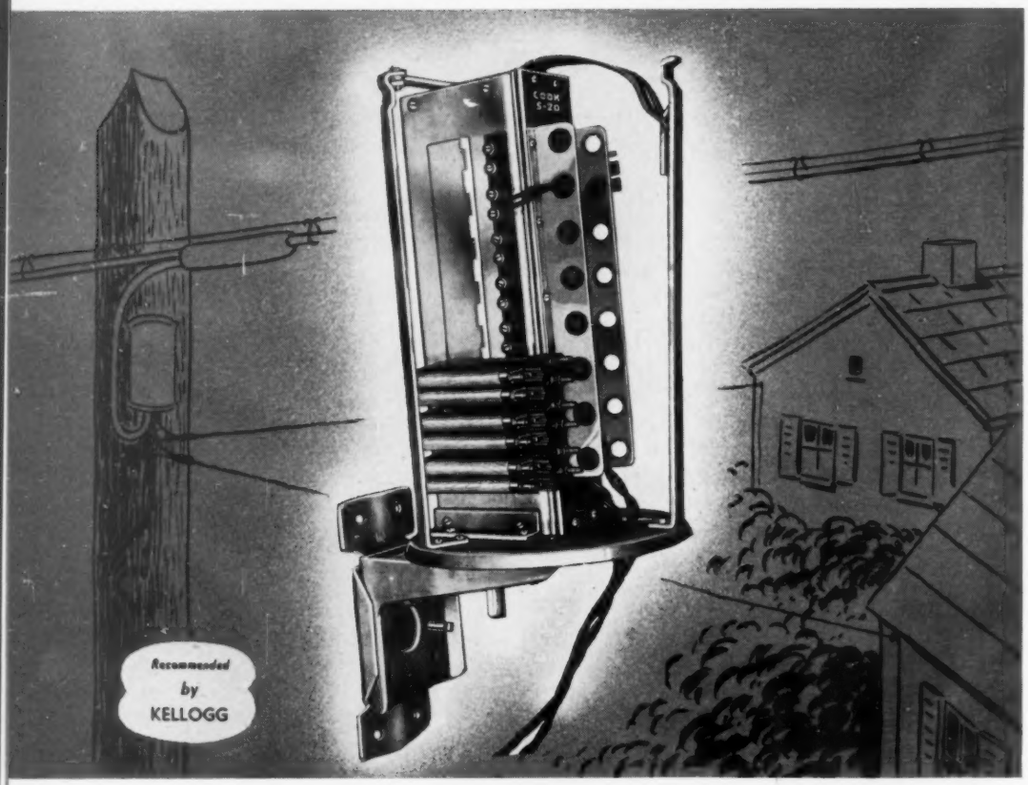
Military Switchboards

All These—Plus These Other Kellogg military products are hand, palm and desk microphones; telephone and radio earphones; cord assemblies; central office, fire reporting and PBX Switchboards; other special equipment and standard Kellogg telephone products.

"HELLO"

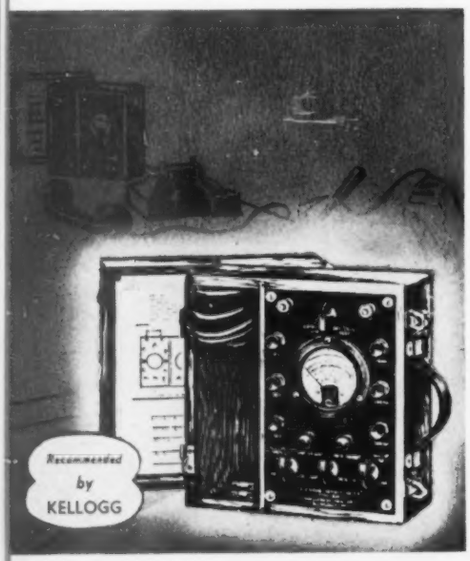
★ ★ ★ ★ ★ ★

A Pictorial Section of Leading Supply Manufacturers Whose Products Are Distributed by the Kellogg Switchboard and Supply Company.



Cook Electric Company. The "last word" in pole cable terminals is the S-20 unit. With this terminal, you can provide protection for working lines only, with resulting economy. Drop wires enter front of terminal, simplifying installation and tracing . . . cable entrance is at the back for extra protection.

Paragon Electric Co. Ironite Drop Wire is exceptionally strong, stands unusual strains with safety . . . saves vital materials too.



Shallcross Manufacturing Co. The Shallcross Telephone Service Meter tests subscriber set output, dry cells, transmitter current, receiver resistance, capacity of condensers, ringing impedance, magneto output and impedance.

Kester Solder Co. Invaluable aid to the busy service man—that's Kester Rosin—Core Solder. Joints protected with it eliminate high resistance points and intermittent open-and-closed circuits. Service troubles are minimized, transmission improved.

Lorain Products Corp. No moving parts mean no wearing parts—logical, isn't it? That's why this Sub-Cycle Ringing Machine is such a foolproof source of economical ringing current. It needs virtually no attention.

Churchill Cabinet Co. Folks like privacy—and comfort—when they phone. Churchill Folding Door Booths provide both. The No. 100 Booth comes with electric automatic ventilator and electric light as standard equipment. No wonder they are real business producers!

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KELLOGG

SWITCHBOARD AND SUPPLY CO., CHICAGO

In this issue each year it is our pleasure to invite our friends in the telephone industry to our "bull" session in our rooms during the annual convention. Although wartime necessity has cut down this annual get together to the short period of two days, we are planning to open our headquarters at the Hotel Sherman the day before the convention. Our room number has not yet been given us but we hope you will take the trouble to inquire when you arrive. Roy, Don and for that matter most of our editorial force will be there to greet you.

▼

The death of Phil Zerwas of Iowa was a sad blow to many Independent operating telephone people. He served this industry well and faithfully. His devotion to his beloved Iowa Independent Telephone Association will be sorely missed by that group.

▼

The present Wire Chief's Training Course is concluding in this issue. We hope those of you submitting answers will complete this final lesson and forward your papers immediately for correction or okay. Certificates will be mailed as promptly as we can get them to you.

▼

See you at the Convention!

Ray

TELEPHONE ENGINEER & MANAGEMENT

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Founded in 1909

Office of Publication, Pontiac, Illinois. Executive and Editorial Offices 7720 Sheridan Road, Chicago 26, Illinois. Phone Rogers Park 3040. RAY W. SMITH, Editor; ROY F. SMITH, Adv. Manager, DON C. SORENSEN, Sales Prom. Mgr. Subscriptions: U. S., Cuba, Mexico $1.50 Per Year; Canada, $2.00; In all Other Countries, $3.50. Single copies, U.S.A., 15 cents. Single copy JANUARY 15 BLUE BOOK BUYER'S GUIDE, $1.00. All subscriptions should be sent DIRECT to 7720 Sheridan Rd., Chicago, 26, Illinois.

Night and Day
COMMUNICATIONS
on all fronts are better because of...

Runzel

CORDS · WIRES CABLES

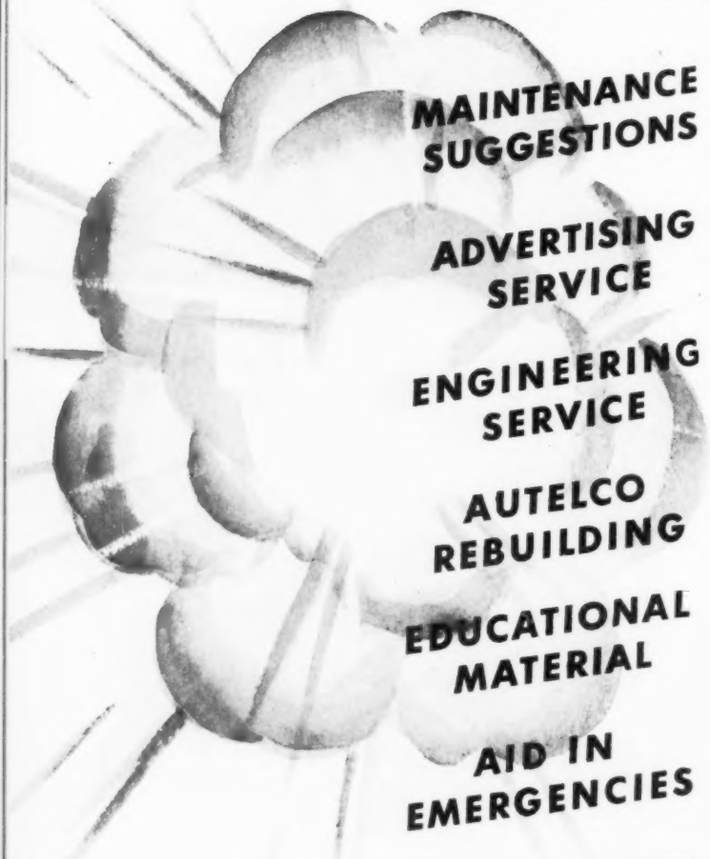
Turning out important material for ALL branches of our armed forces, the Runzel plant—because of our recent BIG INCREASE in plant capacity—can consider even MORE WAR WORK. If you are a prime contractor needing help in this field, we cordially invite you to consult us at once.

RUNZEL CORD & WIRE CO.
4723-31 MONTROSE AVENUE • CHICAGO

Telephone Men, W

CAN HELP KE

TO HELP YOU DO YOUR PART
WE OFFER THESE TIMELY SERVICES



MAINTENANCE SUGGESTIONS

Sound maintenance is more vital now than ever. Ask us for suggestions to make your equipment serve better, last longer.

ADVERTISING SERVICE

Our free listing service will help you meet inventory restrictions, or obtain needed material from other companies.

ENGINEERING SERVICE

Shifts or increases in traffic may require changes in your facilities. Our engineers are available for consultation to meet these needs.

AUTELCO REBUILDING

Puts your worn or discarded apparatus back into efficient service; saves critical materials, saves maintenance costs.

EDUCATIONAL MATERIAL

To aid you in training new wartime personnel for operation and care of your exchange equipment.

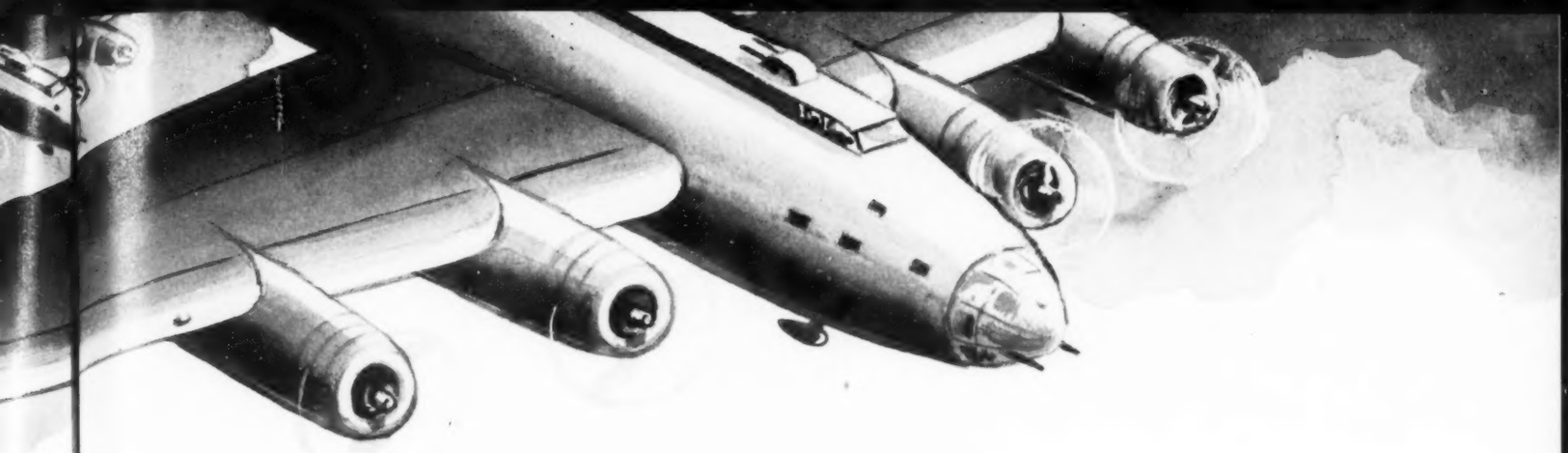
AID IN EMERGENCIES

When you must have equipment to meet an emergency, ask us to help you in obtaining temporary facilities.

The Army-Navy "E" Pennant with two stars for continued achievement in production, flies over the plant of Automatic Electric Company.

WHEN YOU COME TO THE CONVENTION,

our representatives will be glad to discuss these or other wartime problems you may be facing. They will do their best to help you "find the answers."



n, Working Together,

LP KEEP THESE BOMBERS FLYING

So long as the war lasts, we telephone people—operating men and suppliers alike—have a common purpose. Our whole effort must be devoted to keeping the lines of communication working at top efficiency for our armed forces and our essential industries.

Every step you take to keep service standards high—to curtail the use of critical material—to make better use of existing equipment and manpower—will help to keep our bombers flying over enemy territory. And everything **we** can do to help **you,** will make these bombing raids more effective.

That's why we offer you such wartime services as those listed here. The closer we work together in our common purpose, the sooner the day will come when we will be able to supply you with the better telephone equipment you have long planned for.

Let our field representative help you. If you are faced with wartime problems—whether relating to traffic, operation, maintenance, repair, rebuilding, or the meeting of some vital wartime need—ask him to work with you.

AUTOMATIC ELECTRIC

ORIGINATORS AND DEVELOPERS OF STROWGER STEP-BY-STEP MACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

MAKERS OF TELEPHONE, SIGNALING AND COMMUNICATION APPARATUS
ELECTRICAL ENGINEERS, DESIGNERS AND CONSULTANTS

Distributors in U. S. and Possessions:
AUTOMATIC ELECTRIC SALES CORPORATION, Chicago, U.S.A.
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

DRAKE

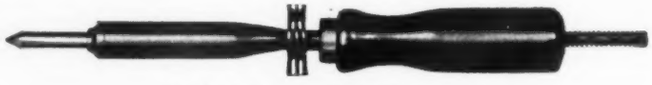
A NAME TO REMEMBER for RELIABLE SOLDERING EQUIPMENT

Through 25 years of soldering iron manufacturing, Drake has developed soldering products that set new high standards of quality and long-lived performance. These high quality values not only mean more for your money—but, also, assure reliable service . . . whenever needed. The soldering equipment illustrated here is representative of the DRAKE line which has AN IRON FOR EVERY PURPOSE.

DRAKE NO. 400 is ideal for work in small places. Weighing only 8 ounces, it is the smallest industrial iron ever designed for tight corners and delicate connections. The element is wound with Nichrome V on high-grade amber mica.

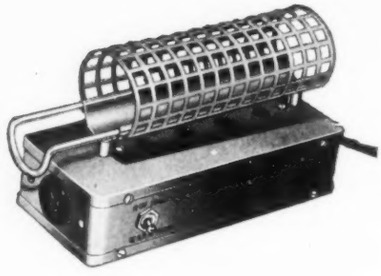
NO 400—60 WATTS—¼" TIP
ONLY 9 INCHES LONG

DRAKE NO. 600-10 is ideal for use on switchboards and other regular telephone work. Used with the heat control below, it forms an excellent stand-by unit. This iron also has a Nichrome V element wound on high-grade amber mica.



NO. 600-10—100 WATTS ⅜" TIP
ONLY 10 INCHES LONG

DRAKE HEAT CONTROL is a fool-proof device for keeping idling irons ready for quick use. There are no thermostats to stick. A flip of the switch and the iron comes to usable temperature in a very few moments. Available with or without hood.



ASK YOUR NEAREST SUPPLIER

IF HE CANNOT SERVE YOU WITH DRAKE SOLDERING EQUIPMENT, WRITE FOR NAME OF DISTRIBUTOR NEAREST YOU

Immediate shipment from stock on moderate Quantities with priority rating of A-1-A.

DRAKE ELECTRIC WORKS, INC.

3656 LINCOLN AVE. CHICAGO 13, ILL.

Photo by Signal Corps

Around the clock our plant is humming to supply our Armed Forces in the field.

At the same time we are helping you to keep our Country's all-important communication lines intact.

THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899

HANG THE LOAD ON HUBBARD HARDWARE
Distributed by 172 Leading Electrical Jobbers located throughout the U. S.
"There is One Near You!"
HUBBARD
HUBBARD AND COMPANY
PITTSBURGH OAKLAND CALIFORNIA CHICAGO
MANUFACTURERS OF A COMPLETE LINE OF HARDWARE FOR TELEPHONE REQUIREMENTS SINCE 1900

LETTERS

from TELEPHONE ENGINEER readers

Dear Mr. Smith:

We moved in August and for some reason I did not get my August and September copies of TELEPHONE ENGINEER & MANAGEMENT.

I was out of town for some time or would taken care of this some time ago.

Am working on the Short Course and would appreciate it if you could send the back numbers or the two lessons I missed, if possible. If there are any charges please forward me a bill for them.

We think the lessons are a great help to us, also, the magazine has so many useful articles and short cuts in it that it is the first thing that I hunt for when I get in.

Fortnightly seems to be coming alright.

Thanking you for past favors, I remain yours truly,

L. E. Sanor,
431 Forest St.
Columbus, Ohio

◆

Gentlemen:

Enclosed are my examination answers to the first lesson in your "Electric Fundamentals for the Telephone Man." I am receiving the magazine in the name of our telephone company. If this does not make me eligible, please let me know and I shall be glad to subscribe in my own name, as the course is worth the subscription price many times over.

Yours truly,
Jens Fuhr
Soldiers Grove, Wis.

(One student is allowed on each subscription.—Editor.)

◆

Dear Mr. Smith:

Received my usual copy of TELEPHONE ENGINEER for July, but noticed that the copy had duplicate pages throughout, evidently a copy that was bound wrong. As a result, half the issue is missing. Will you please send me another copy of the July issue, 1943.

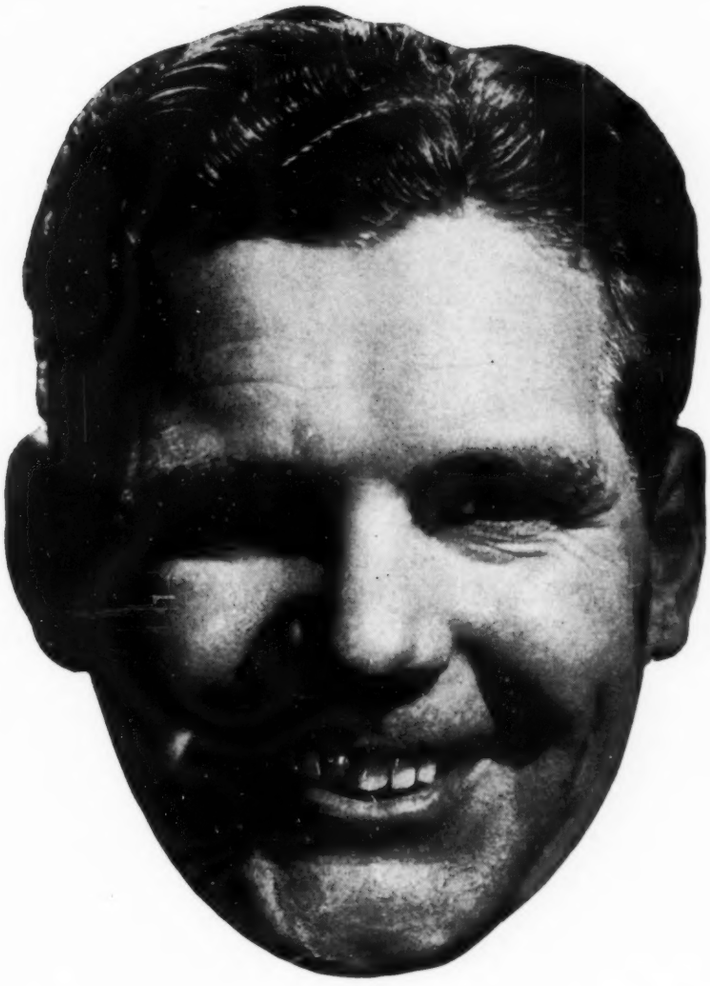
May I say at this time that we all enjoy reading TELEPHONE ENGINEER with its many fine articles, especially the new series on "Electrical Fundamentals." We look forward here each month to receive each new issue.

We wish you continued success.

Yours very truly,
A. W. Ryder, Manager
Wisconisco Tel. & Tel. Co.
Elizabethville, Pa.

(A reprimand to our printer for a bad binding job.—Editor)

FOR VICTORY
BUY UNITED STATES WAR BONDS AND STAMPS



What more can a ten-percenter do? PLENTY!

"My money isn't the only thing Uncle Sam needs right now. He needs war materials, too. So it's up to me to use only the telephone equipment I know will *last longer*.

"What batteries do I use? 'Eveready' 'Columbia' 'Gray Label' Long Life telephone cells. It swings a lot of weight with me to know they're the product of the world's largest dry cell laboratory. Besides, I know from my own experience that they last longer, are always uniform and their sustained voltage results in better transmission efficiency."

★ **UNIFORM QUALITY**
★ **LONGER LIFE**
★ **SUSTAINED VOLTAGE**

CONSERVATION TIPS:

Defective transmitters and receivers are a common cause of poor transmission. An accurate test is to connect a rectifier type voltmeter (0-5 volts) across the instrument terminals, and note whether the deflection is as great as for other telephones of similar type when the test word "bulletin" is spoken into the transmitter.

NATIONAL CARBON COMPANY, INC.
General Offices: **NEW YORK, N. Y.**
Branches: **CHICAGO and SAN FRANCISCO**
Unit of Union Carbide and Carbon Corporation
UCC

The trade-marks "Eveready" "Columbia" and "Gray Label" distinguish products of National Carbon Company, Inc.

...and the *COMMUNICATIONS SYSTEMS* are still serving him

Remember that son of yours, and his love for things electrical? His passion for sending and receiving messages? His cluttered room—looking like a "communications center"?

He's gone for awhile, now... grown up... his room all too orderly and quiet. But the communications lines of America still work overtime for him... serve him, now that he's in uniform, more broadly than they ever did in peaceful times.

Telephone... Telegraph... Radio... each an essential tool of our arsenal of war production... a weapon with which we fight. Tools so vital that without them America's war effort would never hold its pace.

From the very instant of Japan's treachery, the resourcefulness of our communications service has been one of our major advantages... mobilizing our country overnight... gunning our armament program into high in record time... insuring split-second coordination of assault operations on every fighting front.

It takes on the average of 12,000 telephone calls to build a bomber... 60,000 for the completion of a Liberty ship! Multiply these figures by the number of weapons we build monthly. Then you will have some inkling of our dependence on telephone communication alone. Just think of the total hours saved—therefore lives saved—by the availability and use of the telephone, telegraph and radio.

The watchword of every man and woman in our communications service—the greatest on earth—is this: ***Nothing must interfere with the requirements of our armed forces, or of the Nation's producers of ships, guns, tanks and planes.***

The ranks of these loyal workers have been greatly depleted. For many are in service... in the Signal Corps... the Air Force... aboard ships... performing skillfully the tasks for which they were trained ...leaving to those at home an added burden—a burden that has likewise fallen upon the manufacturing and supply organizations behind these services...which services also merit the commendation of us all. Materials have grown scarcer... yet our complex domestic communications systems have actually improved... the standard of service has been stepped-up... the scope expanded.

To those who are carrying on this difficult work so ably, America is forever indebted. They wear no decorations; are accorded no headline acclaim. But theirs is the inner satisfaction of knowing they are doing well one of the nation's vitally essential jobs.

Back the Attack!
BUY WAR BONDS
3rd WAR LOAN

GENERAL CABLE
CORPORATION

MANUFACTURERS OF BARE AND INSULATED WIRES AND CABLES FOR EVERY ELECTRICAL PURPOSE

This Advertisement, reproduced on the left, appeared the week of September 13th in a long list of leading newspapers. It offers a well-deserved tribute to the patriotic-minded men and women of **AMERICA'S TELEPHONE SYSTEMS.** We, of General Cable Corporation have long been proud of the close bond existing between ourselves and this vital industry.

GENERAL CABLE
CORPORATION

DISTRIBUTORS

AUTOMATIC ELECTRIC
SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO, ILLINOIS
SALES OFFICES IN PRINCIPAL CITIES

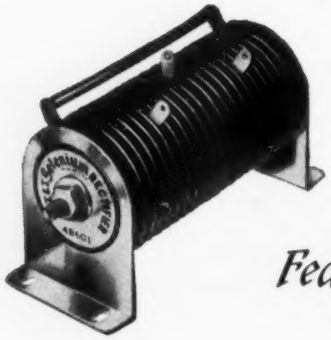
More Power to War Plants...

..from Federal Heavy Duty Power Units powered by I.T.&T. Selenium Rectifiers

If plant expansion has overloaded your source of D.C. power, add Federal Power Supply Units as needed — in any capacity up to 100 kilowatts each.

Whatever your use for rectifier equipment — as part of military devices, in the production and processing of war materiel, or in your postwar products — Federal Power Supplies include the features you require.

Rugged, calling for a minimum of critical material, readily adaptable to most demands for conversion of A.C. to D.C., these power equipments assure long life and efficient maintenance-free operation.



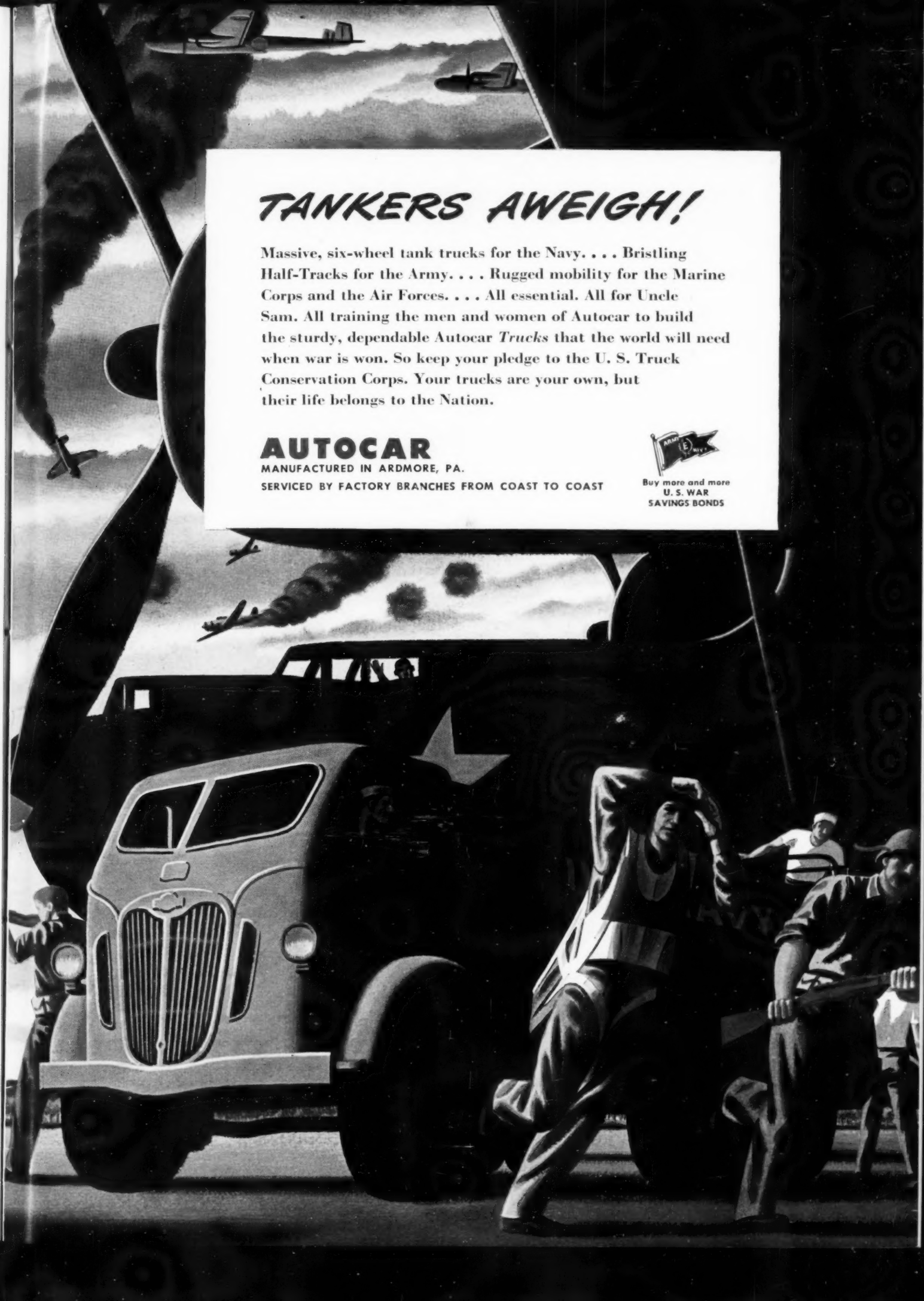
All units are powered by I. T. & T. Selenium Rectifiers — introduced and manufactured by Federal Telephone and Radio Corporation and accepted as standard by industry. *Consulting engineering services available on application to Department G.*

SELENIUM RECTIFIER DIVISION

Federal Telephone and Radio Corporation

AN IT&T ASSOCIATE

1000 Passaic Ave.
East Newark, New Jersey



TANKERS AWEIGH!

Massive, six-wheel tank trucks for the Navy. . . . Bristling Half-Tracks for the Army. . . . Rugged mobility for the Marine Corps and the Air Forces. . . . All essential. All for Uncle Sam. All training the men and women of Autocar to build the sturdy, dependable Autocar *Trucks* that the world will need when war is won. So keep your pledge to the U. S. Truck Conservation Corps. Your trucks are your own, but their life belongs to the Nation.

AUTOCAR

MANUFACTURED IN ARDMORE, PA.

SERVICED BY FACTORY BRANCHES FROM COAST TO COAST

Buy more and more
U. S. WAR
SAVINGS BONDS

Yes: **THEY'RE TALKING ABOUT THE**

47th Annual Convention

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Program of Topics

THURSDAY, OCTOBER 14

- A Look Ahead in the Telephone Business
- Association Activities and the Washington Picture
- Report of Secretary-Treasurer
- The Meaning of Secrecy in Communications
- Employment, Wage and Other Manpower Problems
- Trends at the WPB and other War Agencies
- Mechanics of Applying Toll Compensation Schedules
- How We Can Help Ourselves by Advertising

FRIDAY, OCTOBER 15

- The Importance of the State Associations
- New Thoughts on the Depreciation Problem
- What About After the War?
- What is Ahead in Taxes?
- The Continuing Property Record Situation
- The Importance of the Accountants
- Meeting Current Traffic Loads
- Commercial Departments in War Time and in Peace
- A Plan for Improved Plant Results

A two-day business session of vital importance to every Independent Telephone man . . .

Discussions of—Today's problems, Post-war planning, Proposed and pending legislation, etc., etc. demand your attention.

EVERY INDEPENDENT TELEPHONE MAN IS CORDIALLY INVITED AND URGED TO BE PRESENT . . . .

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

Munsey Bldg. Washington, D. C.

TELEX . . ESPECIALLY PREPARED FOR RESURFACING ALL TELEPHONE EQUIPMENT and BUILDINGS

INVESTIGATE

Telex

PAINTS • VARNISHES • LACQUERS • ENAMELS

At the U.S.I.T.A. CONVENTION

We invite you to learn more about TELEX at the United States Independent Telephone Association Convention October 14 and 15.

Visit our suite in the Sherman Hotel—find out why Telex is the superior material for resurfacing all kinds of telephone equipment—both interior and exterior.

Under wartime conditions thorough resurfacing of all equipment is imperative. TELEX *is* best because it is especially prepared for telephone company requirements.

We are looking forward to meeting many of you for the first time.

For information now or anytime—
contact one of these TELEX Distributors

AUTOMATIC ELECTRIC SALES CORPORATION
KELLOGG SWITCHBOARD AND SUPPLY COMPANY
LEICH SALES CORPORATION
STROMBERG-CARLSON COMPANY

PERFECT PAINT SALES

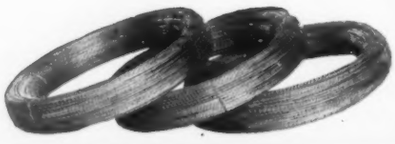
7747-57 SOUTH STATE STREET • CHICAGO, ILLINOIS

TELEX . . ESPECIALLY PREPARED FOR RESURFACING ALL TELEPHONE EQUIPMENT and BUILDINGS

Specify *Crapo* High-Tensile Line Wires for All New Construction and Replacement!

• Demands for more and better rural telephone service are expected to reach new heights after the war. To meet these demands, telephone men all over the country now are laying plans to improve and extend their open wire lines at the first opportunity.

All post-war plans will include long-span lines of *Crapo* High-Tensile Line Wires. These high-strength wires, with their superior telephonic transmission qualities, cut construction and maintenance costs and make a definite contribution to more dependable service, increased customer satisfaction.



For all new construction, investigate the advantages of *Crapo* HTL-135 Line Wire! Its extra high strength makes possible the use of spans up to 350 feet in Heavy Loading, 500 feet in Light Loading Districts.

Crapo HTL-85, with 60% greater tensile strength than standard B.B. wire, permits spans of 225 feet in Heavy Loading areas; provides a substantial increased factor of safety when used for replacement on existing pole structures.

Complete technical data and valuable construction practice information is available for the asking. Write today for Bulletins No. 201 and No. 202!

• • •

Produced by the manufacturers of *Crapo* Steel Strand, Construction Wire, Tie Wire, Ground Wire.

INDIANA STEEL & WIRE COMPANY · MUNCIE, INDIANA

EXIDE BATTERIES ARE USED IN MORE THAN 100 APPLICATIONS BY OUR ARMED FORCES

Exide Batteries..their ease of maintenance got the jump on war conditions!

Long before the war made it necessary to conserve vital materials, Exide Batteries were built with a rugged strength that assured long life and an ability to take a beating. Their fine performance has been so notable, that engineers may well say of other equipment, "It's as dependable as an Exide Battery."

It is equally important to care for such equipment in ways that mean maximum service. Naturally, maintaining an Exide is simplicity itself...and even the newest workers can handle this job. When you buy an Exide, you *Buy to Last*. Take care of these batteries and *Save to Win*.

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia
Exide Batteries of Canada, Limited, Toronto

Exide
TELEPHONE BATTERIES

BUY TO LAST
SAVE TO WIN

HERE'S HOW TO CARE FOR YOUR EXIDES:

1. Keep adding approved water at regular intervals. Most local water is safe. Ask us if yours is safe.
2. Keep the top of the battery and battery container clean and dry at all times. This will assure maximum protection of the inner parts.
3. Keep the battery fully charged—but avoid excessive over-charge. A storage battery will last longer when charged at its proper voltage.
4. Record water additions, voltage, and gravity readings. Don't trust your memory. Write down a complete record of your battery's life history. Compare readings.

If you wish more detailed information, or have a special battery maintenance problem, don't hesitate to write to Exide. We want you to get the long-life built into every Exide Battery. Ask for booklet Form 3225.

RectiChargeR with cover open.

RAYTHEON RECTICHARGERS

Provide Dependable Power IN UNATTENDED STATIONS

Because Raytheon RectiChargeRs keep batteries fully charged . . . are entirely automatic in operation . . . have no moving parts . . . and require no maintenance, they are ideal for unattended locations. Simply plug them into the AC input and connect the output to the batteries . . . adjust the charging rate . . . and from then on RectiChargeRs will—*keep batteries fully charged . . . prevent overcharge and undercharge . . . eliminate voltage variations . . . increase battery life as much as 40% . . . reduce battery maintenance and inspection to once or twice yearly. Write for descriptive bulletin.*

A Raytheon RectiChargeR and batteries provide an automatic AC-DC Telephone Power System.

The coveted Army-Navy "E", for Excellence in the manufacture of war equipment and tubes, flies over all four Raytheon plants where 12,000 men and women are producing for VICTORY.

RAYTHEON MANUFACTURING *Company*
190 WILLOW ST WALTHAM, MASS.

DAN'L H. McNULTY, Mgr.

We are doing Our Best to serve the WAR EFFORT by Serving You . . .

THE INDEPENDENTS

While The Telephone Repair Company is producing some equipment for the armed forces, it is primarily doing its part in the war effort by assisting in keeping present equipment in good operating condition for hundreds of telephone companies throughout the U. S.

And, it is with pride that we are receiving expressions from these many companies in which they voice their complete satisfaction with our friendly service and excellent workmanship.

We are proud, too, of our increasing efficiency in manufacturing methods which has enabled us to continue to offer to telephone companies many of our rebuilding services at the same price today as before the war. For example: our specialty (transmitter repairs) is avilable still at 50 cents.

WANTED

Complete Magneto Telephones or Parts—
Western Electric or Kellogg transmitters— either grounded or metallic style—
Reusable Iron Wire—
Lineman's Portable Test Sets—
Cable Testing Sets.

FOR SALE

New oak cabinets beautifully finished for rebuilding telephones. Descriptive literature on request.

ADDRESS ALL MAIL TO... **DAN'L H. McNULTY, Manager**

TELEPHONE REPAIR CO.

ROGERS PARK STATION **CHICAGO, ILLINOIS**

THE TEST OPERATOR TELLS ME
SHE'S JUST BOUGHT THE CUTEST HAT!

SHORT ON MANPOWER FOR LINE MAINTENANCE?

Here's how Graybar can help you

To get full effectiveness from every available employee, essential supplies must be on the spot when needed. To the fullest extent possible, GRAYBAR keeps its local stocks keyed to your requirements, reducing time-out while awaiting delivery.

What's more, the tools, hardware, wire and other supplies you get "via GRAYBAR" are sound products selected to go together in service. They save the time of experienced linemen, and permit "green" hands to do a better job. Your office people save time, too, when you buy from this "one-call" source.

Why not check with GRAYBAR for wartime line maintenance supplies?

Graybar

Graybar Quality Since 1869 Reg. U.S. Pat. Off. — Everything Electrical . . . . THAT IT TAKES TO WIN!

IN OVER 80 PRINCIPAL CITIES

Executive Offices: GRAYBAR BUILDING, NEW YORK 17, N. Y.

25 YEARS AGO THIS MONTH

Taken from TELEPHONE ENGINEER files of October, 1918.

Twenty-five years ago this month the Indiana Independent Telephone Association held their twelfth annual convention at the Claypool Hotel in Indianapolis. Officers and directors elected by the members included Samuel Tomlinson, Plymouth, president; S. M. Isom, Mitchell, and W. L. Bott, Rensselaer, vice presidents; M. F. Hosea, Indianapolis, secretary-treasurer; and directors H. F. Farwell, Terre Haute; Frank E. Bohn, Fort Wayne; Walter J. Uhl, Logansport; W. W. Harbaugh, Sullivan, F. R. Parrett, Princeton; F. O. Cuppy, Lafayette; William Fortune, Indianapolis; F. R. Strickler, Franklin; J. A. Browne, Winchester; W .M. Bailey, Richmond, and C. R. Stoops of Nappanee.

★

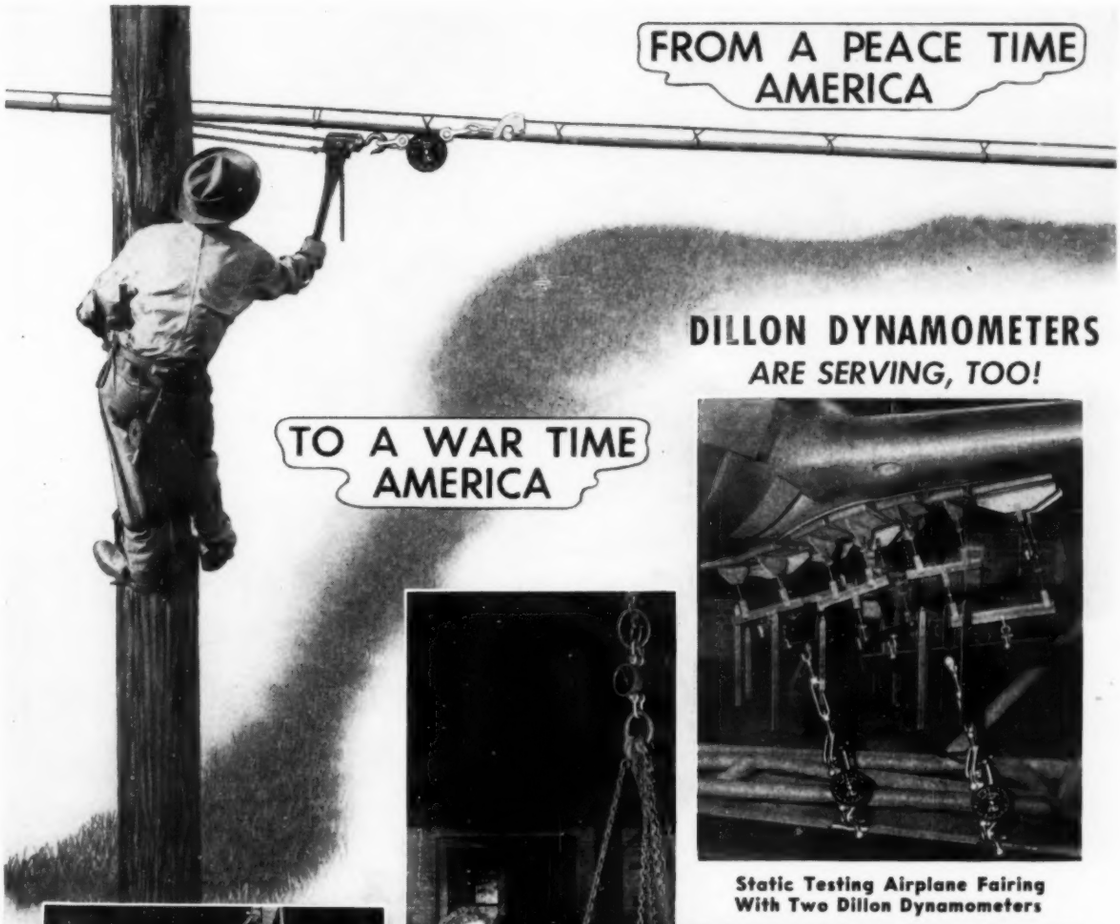
October, 1918 TELEPHONE ENGINEER carried a description and photo of the new home of the Kalihi exchange in Honolulu, a branch of the Mutual Telephone Company. The first automatic equipment to be installed in the Islands was cut into service by the Mutual Telephone Company in 1910 at Honolulu with an initial capacity of 1,800 stations. In 1918 that installation had grown to over 9,500 and additional equipment was on order which, when installed, swelled the total to well past 10,000.

★

According to announcement in TELEPHONE ENGINEER of 25 years ago, Edward I. Pratt, then advertising manager of the Kellogg Switchboard and Supply Company was sworn into service in the Signal Corps as a first lieutenant. Mr. Pratt has been with the company for 13 years. C. W. Nelson, who had been assistant to Mr. Pratt, was given charge of Kellogg advertising in the latter's absence.

★

Twenty-five years ago the Michigan Telephone Owners Association was organized for the purpose of cooperating with the government in telephone matters. E. B. Fisher. Grand Rapids, was elected president; J. H. Fildew, Pontiac, vice president and Roy E. Mapes, Grand Rapids, secretary.

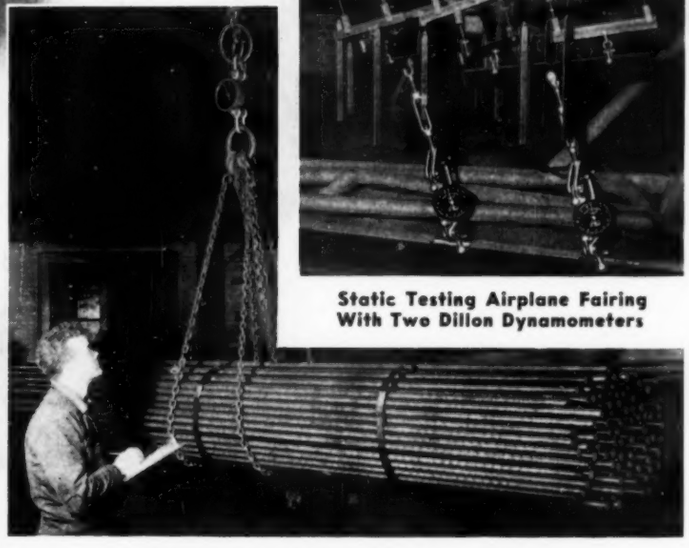


FROM A PEACE TIME AMERICA

TO A WAR TIME AMERICA

DILLON DYNAMOMETERS
ARE SERVING, TOO!

Static Testing Airplane Fairing With Two Dillon Dynamometers



Weighing Steel Bars With Overhead Crane

Testing Tensile Strength of Airplane Pilot Seat

A TOOL WITH MANY USES

Although a precision instrument, a Dillon Dynamometer can "take it"—every size telephone company needs one to double life of wires strung to correct tension. Priced to fit the pocketbook of even the smallest telephone company. Write for literature. Available now—speedy delivery.

Order from your supplier or direct from:

Measuring Tensile Strength of Mechanical Assembly

W. C. DILLON & CO., INC.

5410 W. HARRISON ST.
CHICAGO, ILLINOIS

P&H PENTA POLES

'43 P&H PENTA

FULL-LENGTH TREATED NORTHERN WHITE CEDAR

Properly-seasoned poles are selected for the thorough PENTA treatment.

LONG-TERM INVESTMENT in DEPENDABLE SERVICE

Exceptionally long life—protection against sapwood decay and termites — low per annum cost — all are assured in P & H PENTA Poles.

The amazingly effective highly-developed PENTA full-length immersion treatment is combined with all the NATURAL advantages of standard P & H Northern White Cedar Telephone Poles—in P & H PENTA Poles.

Attractively priced — because the PENTA treatment is more economical than other preservative treatments. Yet it is many times more toxic than other preservatives in common use.

P & H PENTA Poles are non-corrosive, clean, dry, easy to handle. P & H PENTA is today's best pole investment—either for replacements or for new lines.

Write for full information

PAGE AND HILL CO.

MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.

Distributed by AUTOMATIC ELECTRIC SALES CORPORATION . . . . STROMBERG-CARLSON COMPANY

"STILL IN THE LEAD"

BUILT . . .
for the FUTURE
Reliable AVAILABLE . . .
for the PRESENT

Every unit in the "Reliable" line has been designed and built with an eye on the future—with the determination that each fully justifies the name it carries. "Reliable" equipment gives reliable service at minimum maintenance costs.

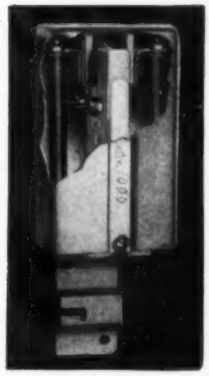
The complete line includes a wide variety of telephone equipment, other than illustrated here, including: steel building terminal boxes, outdoor coil housings, sub-station protectors, lightning arresters, switchboard protectors, main frames, cable grips, bridging connectors, ground rod clamps, station ground clamps, baby knife switches, fuses, fuse blocks, terminal strips, test clips, compression and twist sleeves, etc. "Reliable" identifies the quality on every item in our line.

Join your friends in the Reliable Headquarters.

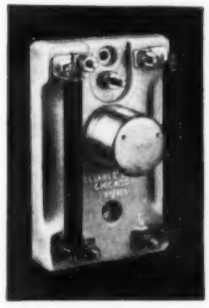
"Reliable" Zinc Cable Hangers for supporting lead covered cable and insulated conductors to steel strand. Copper hangers available on request.

"Reliable" P Drop Wire Clamp. For attaching No. 17 B. & S. twisted pair or parallel drop wire to poles or buildings. It prolongs the life of the drop wire, permits free swinging at the tie, places all wear on the hardware and eliminates sharp bends necessary with other methods.

"RU" reversible unprotected Cable Terminal provides exceptional convenience in installation and long dependable service.



No. 1000 Outdoor Protectors with fuses and air gaps for protection against static and crosses with electric circuits. Weatherproof cover.



No. 955 One-piece, Sub-station Protector, with low absorption porcelain base. Eliminates use for asbestos mats.

"Reliable" B-27 Cable Terminal. Available in three cable terminal fuses. Binding posts are at front conveniently accessible to the lineman without removing fuses, or reaching around the terminal.

Reliable
ELECTRIC COMPANY
OVER 35 YEARS SERVICE TO THE UTILITIES
3145 CARROLL AVENUE · CHICAGO, ILLINOIS

ATTENTION
Men of Vision

IF you are a telephone operating man you are looking forward to your post-war requirements—you realize the demand there will be for central exchange equipment when the war ends—you know you will not care to tolerate the inconveniences to yourself or your subscribers that will result from carrying on indefinitely with worn-out equipment—therefore, we suggest that you discuss your post-war requirements *now*—with a Stromberg-Carlson sales engineer and outline a proposal for your new exchange equipment—provided this proposal meets with your approval, place an order *now* for delivery after the war in the sequence in which it was received and at prices prevailing at the time—we can offer you the advantages of engineering work done now and manufacturing started as soon as Government regulations permit. See us during the Convention of the U. S. Independent Telephone Association at the Stromberg-Carlson headquarters, Hotel Sherman.

VISIT THE STROMBERG-CARLSON RO

Like Millions of Civilians, Our Armed Forces Now Realize That in Communications Equipment

"There is nothing finer than a STROMBERG-CARLSON"

ARMY E NAVY

LET'S ALL TAKE PART IN THE ATTACK

The way we at home can take part in the attack is to put every dollar possible into War Bonds.

ON ROOMS DURING THE CONVENTION

PHILCO VITRABLOC

...THE GREATEST TELEPHONE BATTERY NEWS IN YEARS!

EXCLUSIVE PHILCO FLOTÉ CONSTRUCTION

Among telephone engineers, few battery developments have created such wide-spread interest and enthusiasm as Philco Vitrabloc. And it's understandable . . . this vitrified ceramic cell materially increases capacity of existing battery rooms! Explosion-proof and spray-proof, Philco Vitrabloc incorporates the famous Philco Floté element—the only construction specifically designed for modern, full float service! Philco Vitrabloc cells are now available on exceptionally low priority. Write for catalog giving complete engineering specifications.

PHILCO CORPORATION

STORAGE BATTERY DIVISION • TRENTON, NEW JERSEY

REPLACE WITH PHILCO BATTERIES

ARMY E NAVY

EDITORIAL

A Pleasant Surprise

Here in the Editorial office of TELEPHONE ENGINEER it is no novelty to have our ears pinned back and our ego deflated almost to the "come uppance" stage. With confession in our heart we feel this is one of the times to tell all. To pick the largest Convention Number we have ever published as our confessional is perhaps all the better, as recently we lived—and learned!

It happened during a discussion of telephone magazine editorial features. Several telephone men who were stranded in Chicago for the evening invited us down for dinner. It was a typical gathering where friends who do not see each other often get together in good fun and end up in being visiting firemen with conversation more attractive than the bright lights.

The universal sport of cussing the Editor had begun and being on the defensive we naturally were wide open for what they termed the "works." With cigar smoke heavy we were leisurely told something about our business—what the telephone people needed in their magazines and how they liked this or that feature currently appearing in the pages of our publication. All in fun—we found out one thing that has germinated into an idea—or we might say educated us a bit further in our profession.

It was the consensus of opinion—unanimous in fact—that one of our more important features are the ADVERTISEMENTS of the manufacturers and suppliers to our industry. It did not open our eyes so much as we have in many cases thanked advertisers for their effective layouts that make our magazine more attractive. But to find out from telephone men, large and small, that they consider the advertisements as valuable to the industry as much of our editorial material was a welcome surprise.

As a result we dedicate this Convention Number to the Manufacturers and Suppliers to the Independent telephone industry. In reading the issue you will find the point is well taken. We are able to present a Wartime CONVENTION EXHIBIT of these manufacturers that serve us so well in peacetime and make it hot for the enemy in wartime. They are doing a real job for America and are keeping faith with their industry!

J. R. Porter

President, United States Independent Telephone Association

President, Carolina Telephone & Telegraph Company

Will You Be There?

By JOHN R. PORTER, President
United States Independent Telephone Association

AS PRESIDENT of the United States Independent Telephone Association, it is a pleasure to extend a special invitation to all Independent telephone men to be present at the annual convention to be held at the Hotel Sherman in Chicago on October 14-15. It is a time-honored custom to refer to each year's convention as the biggest and best yet. This year we will waste no adjectives. These are serious times and with every telephone executive busy with his own problems, unnecessary travelling is not in order. Let me assure you that we would not be holding a convention this year if we did not think it imperative that we do so.

This year's convention may not be the largest or the most fun, but IT WILL BE ONE OF THE M O S T IMPORTANT CONFERENCES WE HAVE EVER HELD. So important, in fact, that every active telephone executive should be present.

Please believe me when I say "You cannot afford to miss this conference." I refer to it as a conference rather than a convention, for it will be just that—a conference of the best minds and leaders of our industry.

Its purpose will be to discuss our many current problems. We will also peer carefully into the post-war picture so that we may chart our course carefully yet courageously through the uncertain era lying ahead.

Among the current problems that will come in for full discussion at the convention are:

- Effect of NWLB Rulings on Telephone Companies.
- The New Toll Compensation Agreements.
- Continuing Property Record Requirements of the FCC and State Commissions.
- Current War Production Board Trends.
- Manpower and Employee Relations Problems.
- Improved Plant Practices and the Need for an Independent Plant Handbook.
- Commercial and Traffic Problems and Trends.
- Relief from Discriminatory Taxes.

Our post-war discussions will center around such questions as:

- Shortage of Manpower and the need for training programs.
- Effect of Competition of other industries for the consumer's dollar.
- New electronic developments that may affect or influence telephone plant design.
- Selling the telephone by means of carefully worked out advertising copy.
- Popularizing the telephone by a carefully worked out advertising campaign.
- Solving the small exchange problem.

From the foregoing summary of what to expect at the October 14-15 convention, you can understand why I say you can't afford to miss it and your company can't afford to have you miss it.

Come prepared to throw your ideas, problems, and opinions into the common pool—let's make telephone history at this convention.

On October 15, I will complete my term as your President. I wish to take this opportunity to thank all of you for the fine cooperation you have given me. It has been a genuine pleasure to work with and for you and I shall long cherish the many fine friendships I have made during the year I have served.

Official Program

of the 47th Annual Convention

UNITED STATES INDEPENDENT TELEPHONE ASSOCIATION

THURSDAY, OCTOBER 14

9:00 A. M.—Registration, Mezzanine Floor, near entrance to Grand Ballroom

No Registration Charge

SERGEANTS-AT-ARMS

Mr. H. B. Couch — Mr. Ben Schotte — Mr. George Northington

10:00 A. M. GENERAL OPENING SESSION
SINGING OF THE NATIONAL ANTHEM
A LOOK AHEAD IN THE TELEPHONE BUSINESS
President's Annual Address—Mr. John R. Porter
ASSOCIATION ACTIVITIES AND THE WASHINGTON PICTURE—Mr. Clyde S. Bailey
REPORT OF SECRETARY-TREASURER—Mr. Charles C. Deering
THE MEANING OF SECRECY IN COMMUNICATIONS
Major Albert J. Stowe, representing General George V. Strong, Assistant Chief of Staff and Head of Military Intelligence, U. S. Army.
APPOINTMENT OF NOMINATING COMMITTEE
MISCELLANEOUS BUSINESS
RECESS

2:00 P. M. ADDRESS
EMPLOYMENT, WAGE AND OTHER MANPOWER PROBLEMS—Mr. John H. Agee
TRENDS AT THE WPB AND OTHER WAR AGENCIES—Mr. E. C. Blomeyer
MECHANICS OF APPLYING TOLL COMPENSATION SCHEDULES—Mr. E. M. Blakeslee
HOW WE CAN HELP OURSELVES BY ADVERTISING—Mr. R. A. Phillips
FREE-FOR-ALL DISCUSSION

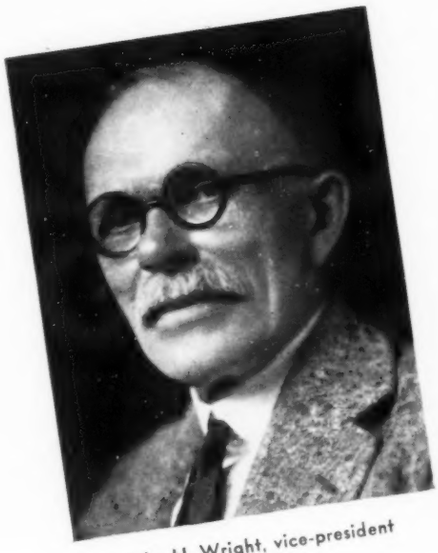
ANNUAL BUSINESS MEETING
INDEPENDENT PIONEER TELEPHONE ASSOCIATION OF THE UNITED STATES
COLONEL GUSTAV HIRSCH *presiding*
Grand Ballroom

FRIDAY, OCTOBER 15

10:00 A. M. THE IMPORTANCE OF THE STATE ASSOCIATIONS—Mr. G. B. Foscue
CURRENT DEVELOPMENTS IN DEPRECIATION—Mr. Thomas A. Boyd
WHAT ABOUT AFTER THE WAR?—President J. R. Porter
ELECTION OF DIRECTORS
WHAT IS AHEAD IN TAXES?—Mr. Harold V. Bozell
THE CONTINUING PROPERTY RECORD SITUATION—Mr. V. E. Chaney
THE IMPORTANCE OF THE ACCOUNTANTS—Mr. Ranford Dunlap
FREE-FOR-ALL DISCUSSION
RECESS

12 Noon—Meeting of BOARD OF DIRECTORS

2:00 P. M. MEETING CURRENT TRAFFIC LOADS—Mr. W. C. Darrow
COMMERCIAL DEPARTMENTS IN WAR AND PEACE—Mr. Kelley McNish
A PLAN FOR IMPROVED PLANT RESULTS—Mr. B. C. Burden
FREE-FOR-ALL DISCUSSION
UNFINISHED BUSINESS
ADJOURNMENT SINE DIE



John H. Wright, vice-president

Clyde S. Bailey, vice-president

Colonel Wm. C. Henry, vice-president

USITA Convenes in Chicago

October 14 and 15

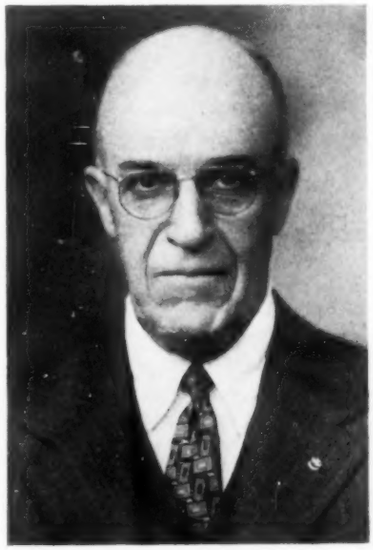
By RAY W. SMITH, Editor

ALL plans are completed for the 47th annual convention of the United States Independent Telephone Association to be held at the Hotel Sherman, Chicago, October 14 and 15. On the page opposite, you will find the Official Program of the meeting which is still on a war-time basis following the precedent set in 1942 when the regular 4-day meeting was cut to 2 days. There will be no organized entertainment for the Independent telephone people who will assemble from all over the nation as business conferences are scheduled for all hours of the day.

In the preceding page we have reproduced a personal invitation issued by USITA chieftain John R. Porter. This statement outlines many of the subjects that will come under discussion and it is hoped that EVERY Independent telephone man will be present when the gavel falls opening the first session at 10 a. m. on October 14.

Mr. Porter, completing his association year as president of the USITA, has been unusually active on association duties since being elected last October. He has travelled to all parts of the country and attended many state conventions. He spoke before these conventions and because of this interest other association officials are predicting this coming convention will be the most important ever held by the National Association.

In other portions of this issue we are reproducing letters received from the various committee chairmen giving you an inkling of the subjects that will be heard in open session. As is the custom each telephone man attending is privileged to ask any question he might wish to propound on the subject being treated. It is hoped by the editor of this publication, TELEPHONE ENGINEER, that some of you who had not planned to attend, before this issue of our magazine reached you, will check over the important details and see for yourselves how important the 1943 convention will be to you.



Chas. C. Deering, secretary-treasurer

The recent amendments to Utility Order U-2 of the War Production Board will be literally taken apart and discussed in all its phases. This Order affects you, Mr. Telephone Man, and it is to your advantage that you understand it fully.

All telephone companies are now operating under war-time practices. They are changing from day to day. Reports on these changes are of utmost importance to each individual operating telephone man. In the program reproduced almost every subject on war-time practices is included.

Post-war plans are now the order of the day for all industry and you will find you too will have to delve in this subject with ever increasing speed. At the USITA Conference last April a paper was presented by B. C. Burden, association engineer and Chairman of the Plant Committee, that outlined many

W. M. Angle, member Executive Committee

of the new developments of the art of communications that might be expected during our post-war years. We understand this subject will be revised up to the present time as electronic developments are progressing apace with many yet to come. Those attending the coming convention will be brought up to date on these new discoveries which might result in many changing ideas directly affecting the telephone industry and the art of telephonic communication.

CLOSER perusal of the Official Program will disclose that every speaker is of the Independent industry with the exception of Major Stowe, representing the Head of Military Intelligence. It was felt there would be no time to devote to subjects not of major importance to telephone operating companies. The reports of the various active committees will, with time allotted for questions, take up almost every minute of the 2-day session.

As all Independents know, President Porter has been stressing the subject of post-war planning throughout the association year. His address and the report of the committee he appointed on Post-War Planning will be of extreme importance as the growing successes of our Armed Forces bring victory nearer and the problems of the peace even closer. The USITA is fortunate in having had the guiding hand of Mr. Porter at its helm during these times. His address is scheduled to sound the keynote of the convention.

J. F. O'Connell, member Executive Committee

ALTHOUGH the manufacturers and suppliers are not exhibiting their products as they have done during the past years of peace they will have their representatives in attendance during the entire days and evenings of the convention. Telephone men will notice our Editorial in this issue thanking these manufacturers and eulogizing them for the services they are rendering the Independent industry by their cooperation and assistance to Independent operating companies and to the industry trade press. During this wartime period the representatives of the manufacturers have done a very good job in acquainting our industry of priority problems and have gone to the expense of maintaining departments to do so—at the same time they have literally turned over their plants to the government to produce the necessary

THOMAS A. BOYD
Chairman, Committee on Depreciation

Dear Mr. Smith:

The report of the Depreciation Committee will, of course, deal principally with the "Report of Committee on Depreciation" recently published by the National Association of Railroad and Utilities Commissioners. Our Committee report will contain an outline of the important features of the NARUC Depreciation Committee report, together with a discussion of their implications as related to the telephone industry. Some of the main points in the report of the NARUC Depreciation Committee are:

1. Recommendation of the straight line method generally for public utility accounting and financial purposes and also for the computation of both depreciation expense and accrued depreciation for the purposes of rate making.

2. Recommendation that depreciation expense be based on original cost of depreciable property.

3. Recommendation as to the methods of adjusting to correct deficiencies in the depreciation reserve.

4. Methods of estimating service lives.

5. Recommendation as to depreciation in rate making.

6. Discussion of depreciation in income taxation.

As you probably know, the NARUC Depreciation Committee report is very voluminous, and we have not as yet had sufficient time to study it completely. Any further points which appear upon further study of the report to be important to the telephone industry will also be included in our Committee report.

Very truly yours,
Thomas A. Boyd,
Chairman, Committee on Depreciation

J. P. Boylan, member Executive Committee

Carl D. Brorein, member Executive Committee

war materials to win the present conflict. Their advertisements in this issue are in a large way their exhibits to you for this convention.

Promptly on the morning of October 14, at 10 a. m. the sessions will begin. The address of Mr. Porter will be followed by the report of Clyde S. Bailey who is completing his first year as the vice president in charge of the USITA headquarters office. Mr. Bailey is well known as a speaker and his report will supplement that of Mr. Porter in that Mr. Bailey will outline the more detailed actions of the Washington office and and the meaning of many government orders, activities and impending legislation.

"The Meaning of Secrecy in Communications" is the only subject handled by an out-of-the-industry speaker. Association officials are particularly anxious that everyone in attendance hear this subject which will be a closed door session with the press excluded. Immediately following this subject the Nominating Committee will be named and miscellaneous business transacted.

V. E. Chaney, member Executive Committee

AT 2:00 p. m. the industry will hear the reports of various of its own committees. We are reproducing in the pages of this issue several letters received from a portion of the chairmen of these committees, however, the picture is changing from day to day and their addresses will be geared to include all last minute happenings. These committees have spent untold hours in time, travel and expense and have been an integral factor in the services of the National association to our industry.

Employment, Wage and Manpower Problems, a most important day to day problem to our industry will be handled by the Chairman of the Committee John H. Agee, Lincoln, Nebr. The War Activities Committee headed by Chairman E. C. Blomeyer, Chicago, has been perhaps the most active committee during the year and its report will include what has been done and trends to be expected in the future. This committee is a most important one as it deals almost directly in problems affecting our activities in the war.

B. C. BURDEN
Chairman, Plant Committee

Dear Ray:

The Plant Committee's report will cover a suggested plan which contemplates the setting up of sub-committees to sudy and investigate various phases of plant operations. The Plant Committee believe that there are many ways in which plant operations may be improved and maintenance costs lessened. Sub-committees consisting of well-qualified men if given single problems on which they can concentrate and individually collect reliable data from which they can draw sound conclusions, should be able to develop improved procedures for both construction and maintenance of telephone plant. Other industries, particularly power, have utilized this plan to advantage.

The Plant report will also have an interesting story to tell on electronic devices and their possible influence on telephone plant design. From the advance preview we have had of the Plant Committee's report, the Editor feels sure that this will be one of the very worthwhile features of the program.

Yours very truly,
B. C. Burden,
Chairman, Plant Committee.

Toll Compensation is also an important subject to the industry as it directly affects our pocketbook and profit and loss. The Chairman of the Toll Compensation Committee Edwin M. Blakeslee, Madison, Wis., will explain the mechanics of applying toll compensation schedules. Readers of this publication will recall the story in our last issue regarding the settlement of toll compensation on the Pacific Coast. This

M. K. McGrath, member Executive Committee

E. M. BLAKESLEE
Chairman, Toll Compensation Committee

Dear Ray:

You have asked me to indicate to you the subject matter and scope of my report of the activities of the Toll Compensation Committee during the past year to be given at the annual convention of the United States Independent Telephone Association being held in Chicago on October 14-15, 1943.

Many events of importance to the Independent telephone industry have transpired since our meeting in Chicago a year ago. In the interim, FCC Docket No. 6468—more generally referred to as the Long Lines toll rate case—was initiated and disposed of through a negotiated toll rate settlement resulting in a reduction in revenues to the American Telephone and Telegraph Company of some $50,700,000. In this connection, Independent telephone companies gained materially through the recognition of a number of principles, some of which were contained in the Association's brief filed in the above mentioned case, and others of which were advanced by the Toll Compensation Committee and negotiated with representatives of the Bell System. I reported on these happenings at the Spring Conference held in Chicago on April 22-23, 1943.

Now that the Associated Bell Telephone Companies are offering new and revised toll traffic agreements and compensation schedules, the Committee believes that it is time to present to member companies a demonstration setting forth the mechanics of application of the new settlement arrangements. There is now in the hands of Committee members for review and comment the draft of a manuscript comprising a demonstration of how the new compensation schedules are applied.

While it is true that executives may have a staff member to verify and approve toll settlement statements, the Committee nevertheless believes that those executives should be interested in and have a general understanding of the application of these new schedules. It is with this in mind that the Committee is now engaged in preparing the material which I, as its Chairman, will present in the report of our activities during the past year.

Very truly yours,
Edwin M. Blakeslee,
Chairman, Toll Compensation Committee.

J. H. Agee, member of the Executive Committeee, chairman of the Employment Relations Committee.

jects should pertain to that part of the program immediately preceding.

Following the completion of the first day business session the Independent Pioneer Telephone Association of the U. S. will convene for its annual business meeting. Col. Gustav Hirsch, Columbus, Ohio, will preside as president of the meeting and after the business portion of the program has been completed the Pioneers will hear an address by the well known speaker Ernest R. Rosse.

The second day session will, through necessity of a very full program start promptly at the appointed hour of 10 a. m. Scheduled to start the sessions is the report of Chairman G. B. Foscue, Chicago, of the Coordinating Committee. Each telephone man in attendance will

(Please turn to page 62)

F. R. McBerty, member Executive Committee

committee has cooperated, and in many cases directed the activities of the Independent groups throughout the country in ironing out their toll problems. Additional tolls have been obtained by the research of this committee.

We understand the Chairman of the newly named Advertising Committee, R. A. Phillips, Sioux Falls, S. Dak., will present a preliminary report to the Board of Directors of the Association and if plans are far enough advanced will possibly outline to the open session the progress being made on his Committee.

THE United States Independent Telephone Association is known for its democratic method of having free-for-all discussion on any subject of importance to the industry. This meeting will be no exception, however, the sub-

P. W. Conrad, member Executive Committee

Highlights of the Communications News

Important Communications developments of the past month, briefed for busy readers

by

ROLAND C. DAVIES
Editor, Telecommunications Reports

IN the National Capitol there are a number of developments brewing of significance to the telephone industry —some of them out in the open and others shrouded in secrecy and which because of the war situation cannot be reported extensively.

The affairs which are out in the open and have produced recent developments of importance are the WPB Communications Division's decision to consider expansion of the telephone industry's construction program for 1944 which indicates a loosening up of the critical materials and metals situation, especially copper; the outlook for the Army and Navy in continued production of communications equipment; and the FCC's sanctioning of the Western Union-Postal Telegraph merger.

Post-War Planning

ON the other side of the ledger—— the events behind the scenes which cannot be depicted in any detail—the most important for the telephone industry is the Telecommunications Postwar Planning Board, established by the State Department and composed of the leading governmental officials charged with communications affairs. This Board is headed by Assistant Secretary of State Breckenridge Long and numbers on its membership Naval Communications Director Rear Admiral Joseph R. Redman, a leading Signal Corps officer, Civil Areonautics Authority Director Charles I. Stanton and FCC Chairman James Lawrence Fly. Mainly interested in the future international communications policies of the United States, the Board is studying the consolidation of international communications services. One group of government officials feels that only the international cable and radiotelegraph companies should be combined into a single system like the British Cables & Wireless, while another coterie of governmental representatives would fuse the international telephone service of the A.T.&T. and international shortwave broadcasting (now being operated by the government's Office of War Information under leases) into the consolidation. The fact that this Board makes its recommendations direct to President Roosevelt—and communications is recognized by Mr. Roosevelt as one of the most vital arms of American foreign relations and security—makes its work of tremendous importance.

FLASH! MERGER APPROVED

The Federal Communications Commission has approved the Western Union-Postal Telegraph merger by a vote of five to one with Commissioner Durr dissenting. Holding that it could not impose terms and conditions under the Congressional Statute, the Commission expressed serious concern over the failure of the telegraph managements to maintain as adequate technical progress so does the telephone industry.

The FCC Report contained no reference to TWX transfer to telegraph merger but mentioned that there will be considerable curtailment of leased circuits from telephone companies. The report urged the Western Union merged company to retain telegraph facilities of Postal in communities which are not now served by the Western Union and which would include the use of Independent telephone companies as agencies.

E. C. BLOMEYER
Chairman, War Activities Committee

Dear Ray:

Replying to your inquiry the War Activities Committee of the United States Independent Telephone Association has been very busy since the last convention with matters arising from war activities which affect Independent telephone companies. The Committee has issued a number of "War Activities Bulletins" which have had distribution throughout the Independent field by both the national and state associations. The Committee has also cooperated with the Post-War Planning Committee in the preparation of that committee's report for the forthcoming convention and has cooperated with various other committees of the Association upon several matters.

The War Activities Committee has also taken an interest in the question of the reduction of paper used in telephone directories, and in other matters of the kind which have been dealt with primarily by the Association's staff in Washington.

The Committee is now engaged in several activities and questions of importance and some of which it hopes will be sufficiently completed that they can be reported on to the forthcoming convention.

Very truly yours,
E. C. Blomeyer,
Chairman, War Activities Committee.

Construction Program

THE receptivity of the WPB Communications Division to increased 1944 construction programs by the telephone industry disclosed to TELEPHONE ENGINEER by its Director Leighton H. Peebles, became known after the Bell System was allowed to present to the Division a supplemental enlarged construction program during the latter part of September in addition to its original plan filed during the middle of last month. The Independent telephone industry also has been invited to submit any additional program. The 1944 construction plans of The Bell System are to be studied at conference Oct. 11 of officials of governmental agencies charged with communications affairs and the determination of this conference undoubtedly will be presented at the next session of the Telephone Operating Industry Advisory Committee Oct. 20.

In the expansion of the industry's plans for next year, it was believed that one of the major proposals might well be the renewal of the recommendation for the permitting of limited production of telephone subset apparatus and, if the critical metals situation has lightened as is now indicated, there seems to be a rather good chance of its approval by the WPB and other government agencies. It will be recalled that the Bell System and Independents had proposed a limited resumption of instrument manufacturing last May but the WPB authorities felt that the copper and critical metals supplies were too tight to permit it. Another hopeful sign in the WPB activities is that the Communications Division and the Telephone Operating Advisory Committee are going to study Oct. 20 the streamlining and simplification of the U-2 and U-3 limitation orders.

Army Conference

THE conference at the War Department's Pentagon Building in Washington September 27 and 28 under the direction of Under Secretary of War Robert P. Patterson and at which General George C. Marshall, Chief of Staff of the Army, Lieutenant General B. B. Somervell and Lt. General William S. Knudsen and other leading Army luminaries addressed a group of 200 outstanding industry and war production leaders was a most important affair. Several key figures in the communications manufacturing industry were present, including president C. G. Stoll of the Western Electric Company, president W. M. Angle of the Stromberg-Carlson Company, president John Ballantyne of the Philco Corporation and president David Sarnoff of the Radio Corporation of America.

At this executive meeting the war production leading figures were told of the plans and future requirements of the Army and the United Nations forces and undoubtedly communications apparatus and equipment received vital attention. For the telephone manufacturing industry it is most important for future planning to be advised about the requirements of the armed services and particularly how extensive the use of American telephone equipment in the occupied nations of Europe when recaptured from the Axis is going to be in the rehabilitation of the communications systems of those nations. If telephone apparatus in a substantial quantity is needed for the rebuilding of the European nations' communications systems, it will have a twofold benefit, it is thought,—not only will it aid the telephone manufacturing industry in its transition back to normal peacetime operations but it will also give American communications products a head start and reputation in world commerce. When peace comes, the manufacturing industry also will have to produce a considerable degree for the rebuilding of the telephone systems in the United States. Incidentally, the Army Signal Corps procurement service under Major General William H. Harrison recorded another increase in communications equipment production during September over August, continuing the record of gains which commenced last June. The Signal Corps has now completed its

(Please turn to page 64)

Convention Dates

Telephone Association of Maine, Elmwood Hotel, Waterville, October 7.

United States Independent Telephone Association, Hotel Sherman, Chicago, October 14 and 15.

Independent Pioneer Telephone Association, Hotel Sherman, Chicago; October 14.

South Dakota Telephone Association, Hotel Widman, Mitchell, October 21.

Virginia Independent Telephone Association, Roanoke Hotel, Roanoke, November 4 and 5.

North Carolina Independent Telephone Association, Washington-Duke Hotel, Durham, November 8 and 9.

South Carolina Independent Telephone Association, Hotel Chester, Chester, November 10 and 11.

Alabama Independent Telephone Association, Jefferson Davis Hotel, Montgomery, November 15 and 16.

Oklahoma Telephone Association, Huckins Hotel, Oklahoma City, November 29 and 30.

Dear Ray:

The Employment Relations Committee, in accordance with the desire of the officers of the Association, will present a streamlined report of its activities for the year to the Convention in Chicago next month.

This report will cover the work of the Committee more particularly in regard to rulings of the WLB with reference to wages, orders of the WMC affecting our industry, and recent conferences we have had with the Wage-Hour Administrator regarding appointment of an Industry Committee.

This latter proposal is of vital importance to our industry since it is apparent the intention of the Administrator is to insist that a forty cent minimum, which would otherwise not become effective before October 1945, shall be put into effect in the very near future upon recommendaion of an Industry Committee.

It is very likely that this Industry Committee will be announced between now and the date of the Convention. It is expected that the Independent telephone industry will be represented by at least two and possibly three members on the Industry Committee.

The foregoing and related matters will be the general subjects of our report to the Convention.

Very truly yours,
J. H. Agee,
Chairman, Employment Relations Committee.

Telephone Engineer's TRAINING COURSE

☆

ELECTRICAL FUNDAMENTALS FOR THE TELEPHONE MAN

☆

D. C. Motors and Generators

Part VI---Conclusion

General

WHEREAS a generator is a device used to convert mechanical motion into electrical energy, a motor is a device used to convert electrical energy into mechanical motion. Motors and generators are very much alike with respect to essential parts and consist essentially of a revolving member known as the **armature, field poles and coils** which supply an intense magnetic field through which the armature moves, and a **commutator** to change the alternating current inherently generated in every revolving armature into direct current for external use. An understanding of the theory of operation of direct current motors can be had by referring to Figure 86.

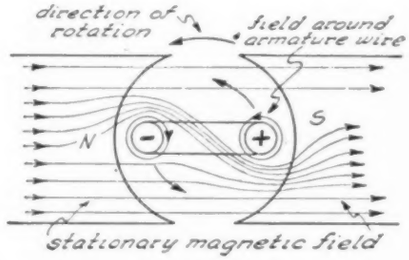


Fig. 86.—Action of a D. C. motor

Theory of DC Motor Operation

THIS figure shows how the circular magnetic lines of force surrounding any current-carrying conductor (in this case the single armature coil) reacts with the steady magnetic field flux passing from the north to the south field pole. This magnetic flux in the field poles is due to the direct current flowing in the field coils. This reaction causes side E of the coil to be forced upward and the other side A to be forced downward. The coil therefore tends to revolve. The coil would, if started from the position as shown in Figure 86, tend to revolve to a position midway between the field poles. By means of a **commutator,** however, the current fed into the armature coil is reversed at the instant the coil is in the neutral gap between poles. The inertia of the armature is sufficient to carry it past dead center and then the action is again repeated, except in this case conductor A is forced upward and B downward due to the fact that current flowing through these conductors has been reversed by the commutator.

NOTE: Through oversight, Question 5 of Examination No. 4 failed to state the resistance of the volt meter, which should to taken as 1000 ohms.

The Commutator

THE commutator may be thought of as being a rotary switch which reverses the current flowing in the armature conductors at just the right instant so that the conductors always tend to move in the same direction.

A proper conception of the reaction between the magnetic flux in the field coil and the magnetic flux due to the current flowing in the armature may be had by visualizing the flux passing from north to south pole, as shown in Figure 86, as a number of stretched rubber bands tending to straighten out and thus push the two sides of the coil out of the way.

Practical Motor Construction

IN order to make motors which will operate efficiently, that is, produce as much power output for the electrical power input as possible, it is necessary that the armature coils be wound on an iron core and that a large number of coils, each of which contains a number of turns, be used. By using more

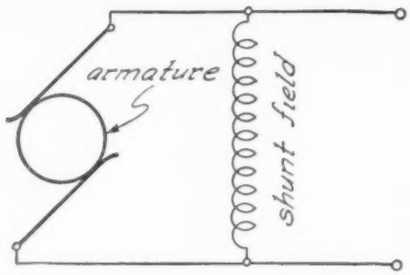


Fig. 87.—Connection of armature and field in a shunt type DC motor

than one coil it means that there is always some coil which is interacting with field flux providing a turning torque at all times. If a single turn coil were used, there would be what might be referred to as a dead center; that is, when the coil was in the space between the two field poles, in the case of a two pole machine there would be no turning torque applied and the motor would not start, although when started it would continue to run as inertia would carry it over this dead center. The high magnetic flux required is produced by a **field winding** connected as shown in Figure 87.

Laminated Armatures and Field Poles

THE armature coils are wound on iron cores which consist of a number of thin sheets of laminations which are stacked closely together and which are provided with grooves in their face into which the coils are laid. The ends of the coil are connected to commutator segments and current is introduced into the armature by means of brushes which bear on the commutator. Motors are provided with two, four, six, or eight poles. Small motors have only two, while larger motors have four or six. Exceptionally large motors may have eight or more poles. The number of turns of wire in each of the coils and the size of wire is controlled by the voltage at which the motor is intended to operate and its horsepower rating.

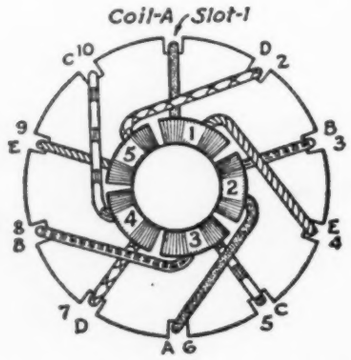


Fig. 88.—Sketch showing how coils are connected to commutator in D. C.

Figure 88 shows how the several coils on an armature connect to the commutator. The illustration shows only one turn for each coil whereas an actual motor would consist of multi-turn coil.

Armature winding or rewinding is a professional trade which requires a knowledge of the various types of windings, methods of connecting windings to the commutator, mechanical features of armature, field pole construction, and other similar information. Armature winding does not necessarily require an extensive knowledge of electricity.

Counter Voltage of a D. C. Motor

DIRECT current motors when running generate a voltage which opposes the line voltage. This voltage is referred to as the **counter e. m. f.** Inasmuch as the amount of current any motor draws is regulated by the counter voltage developed by the motor, it is obvious that the slower a motor runs due to being heavily loaded the greater current it will draw from the line as its counter voltage decreases due to a decrease in speed.

D. C. Motor Is Also a D. C. Generator

ANOTHER way to look at counter e. m. f. is to think of a motor as being a generator, which is true, as any direct current motor is also a direct current generator and can be used as such. Now suppose that when the motor is operating we suddenly disconnect it from the line. It is obvious that its inertia will cause it to continue to run and if a voltmeter were placed across its line or input terminals, a voltage would be recorded which would be proportional to its speed at the time that the reading was taken. It is a basic electrical law that the counter generated voltage will always oppose the impressed voltage; hence we can readily understand that a motor when running on the line would generate a counter or opposing voltage slightly less than the impressed voltage.

Starting Boxes for Motors

MOTORS tend to draw a great deal of current when they are first connected to the line for at this time they are generating zero counter voltage; hence, the current that flows into them from the line is limited only by the resistance of the armature itself, which is often quite low. For this reason it is **necessary to use starting boxes on large motors.** These boxes merely introduce resistance in the circuit which is gradually cut out as the motor comes up to speed.

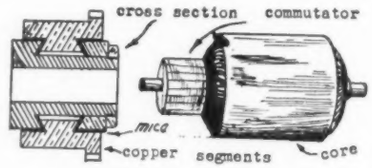


Fig. 88-A.—Armature construction

Figure 89 shows schematically how a starting box is connected in the circuit. Most starting boxes are equipped with electro magnets which hold the operating handle in the closed position. These electro magnets are connected across the line so that if the supply voltage fails they de-energize and release the starting handle which is pulled to the off position by a spring. This feature is necessary on all large motor installations for the windings could easily be destroyed were the motors allowed to stay across the line in the event of a temporary power failure, and the energy subsequently restored.

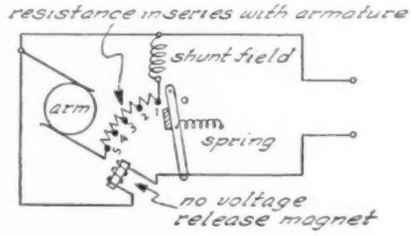


Fig. 89.—Use of starting box to protect D. C. Motors

Types of DC Motors

THERE are three common types of DC motors; namely the **shunt type,** the **series type,** and the **compound type.** In a shunt type motor the field winding is connected directly across the armature. In a series type the field winding is connected in series with the armature. In the compound type two field windings are used, one a series winding and the other a shunt winding. Figure 90 illustrates the three types of motors.

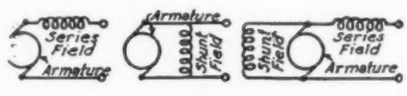


Fig. 90.—Three types of D. C. motors

(Please turn to page 84)

A QUESTION!

By an Independent Telephone Pioneer

Why do the clock hands on Jewelry painted signs show a time of 8:18?

(Turn to page 99 for answer)

Telephone Relays for Alternating Current

By E. R. COLLINS
Wire Chief Manitoba Telephone System, Brandon, Manitoba, Canada

TELEPHONE Relays are usually used for the purpose of extending the operations of a Direct Current operation to one or more other circuits. Frequently relays are required that will respond to Alternating Current. For example, in a magneto telephone system, the line signal is a relay device, operated by the generator of the subscribers telephone to call the operator. In Fig. 1 this is depicted. Usually it is called a line signal, or drop, because the alternating current causes the armature to be pulled against the core, once for each alternation. This armature is pivoted at the top, and the motion of the armature against the core is transferred to the reed at right angles to it. This reed has a hook on the outer end, that latches over a light piece of metal called a shutter. The shutter is pivoted at the lower end, and is slightly inclined away from the coil, so that it will fall by gravity when unlatched. The falling of the shutter does two things. It gives a visual indication to the operator of the line calling, and also closes when desired a local contact operating a buzzer or lamp energized by a local battery. This commonly appears as the Night Alarm. But in its final analysis, this device is a relay, transferring the output of an alternating current generator into a direct current signal device which will remain operating till the shutter is restored. Thus we have a form of Alternating Current Relay.

In Fig. 2, another form of Drop Signal is shown. Here two coils are wound on the one core, one for the Alternating signal from the telephone or distant exchange, and the other used for restoring the shutter to its latched position. In Fig. 1 the shutter is restored either by the operator putting it back or by some mechanical linking with the jack, which restores the shutter when the operator inserts a plug in the jack. In Fig. 2 it is possible to have the line signals or relays on a rack apart from the switchboard. The operator then hears no audible signal from the rattle of the reed as it keeps in step with the alternating current. The shutter in this instance is made of soft iron pivoted at its lower end and operates the same as in Fig. 1, except that when the restoring contact is closed, it is pulled up, and latched electrically. The restoring contact may be a key or a contact in the line jack. The local circuit may be a buzzer or lamp, used to give the signal to the operator. This is our second form of an Alternating Current Relay.

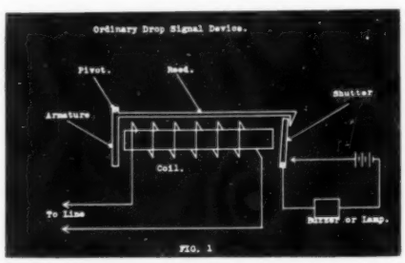


Fig. 1

The Author

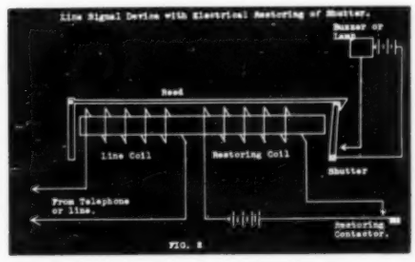


Fig. 2

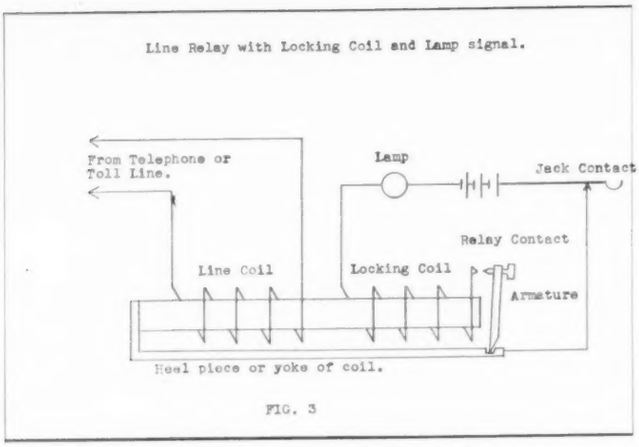


Fig. 3

IN Fig. 3, another arrangement is shown. Here the line coil pulls its armature, which is fitted with a contact screw. It is pivoted on a knife edge at its lower end. The second winding is in series with a line lamp, local battery and a jack contact to release the locking coil. The armature contact strikes against a contact set in a light spring, so that the vibrating effect of the alternating current on the armature will make a more positive contact. This type of relay is a bit tricky because if the alternating force should be cut off at a no voltage point, the contact is apt to be too light to lock its winding and the signal has to be repeated to get the operator to answer. However, this type of relay has given service to a great many exchanges.

In Fig. 4 a different form of relay device is shown. The contacts have been omitted from the armature, but it is understood that the armature closes one or more contacts. The coil arrangement is different in that two separate coils are mounted on a common yoke and attract a common armature. One coil has a 2 m.f. condenser in series with it. Referring to the schematic in Fig. 5, assume that a positive alternation appears at the right hand line wire in the lower drawing. Coil "A" will receive the effect of this positive impulse at once, but the condenser is in series with the "B" coil. When the line side of the condenser is made positive, the opposite side of the condenser will be negative. Thus a negative polarity will appear at the left hand of the "B" coil. When the positive pulse ceases the condenser discharges, and in doing so its polarity becomes reversed, so that it will present a positive pulse at the "B" coil. This delayed action bridges over the no voltage period so that when coil "A" is de-energized, coil "B" is pulling the armature with the same polarity. The series arrangement of coils as shown in the upper schematic takes less energy from the line but has a weaker pull than the parallel arrangement in the lower schematic. This relay, as shown in Fig. 4, is often used to provide an alarm circuit for office generator supply, and remains energized as long as the power is applied to the windings. However, it will not handle a very great spring load, and is a bit tricky to adjust and keep it silent. It is a much better arrangement than the preceding types.

A more recent development is shown in Fig. 6. Here the core is larger in cross section and is laminated, that is, made up of several strips of thin metal clamped together. A slot is cut in the armature end of the core as shown in Fig. 6, and into this is pressed a copper ring, of rectangular shape. This is called a shading coil. It will be noted that it takes in only part of the core. When current is impressed on the coil windings, the core becomes magnetized. The lines of force extend out through the ring, and around through the armature and heel piece to complete the magnetic circuit. This induces a low voltage high amperage current flow in the shading coil in the opposite direction to the impressed voltage. But as it embraces only part of the core, it will have little effect on the pulling power of the impressed voltage on the armature. Then the alternation ceases, and the lines of force recede and travel through the shading coil in the opposite direction. This induces a heavy current flow in the shading coil in the same direction as the impressed voltage which has just ceased. This will then magnetize the part of the core embraced by the shading coil in the same direction as the whole coil was magnetized in the first alternation. As it takes less pull to hold an armature attracted, once it is pulled against its core, this continued polarity holds the armature operated until the next alternation in the opposite direction saturates the whole core and pulls the armature with the opposite polarity.

This type of relay will handle quite a heavy load of springs without chattering. It is most suitable as a voltage alarm device rather than a line signal where the energy may not be very great.

In Fig. 7 a device known as a Rectifier is introduced. These are known as Dry Disc Rectifiers. One type is known as a Magnesium, Cupric Sulphide Rectifier. It consists of a number of discs held together under pressure. The unlike surfaces are alternately placed together. In

(Please turn to page 58)

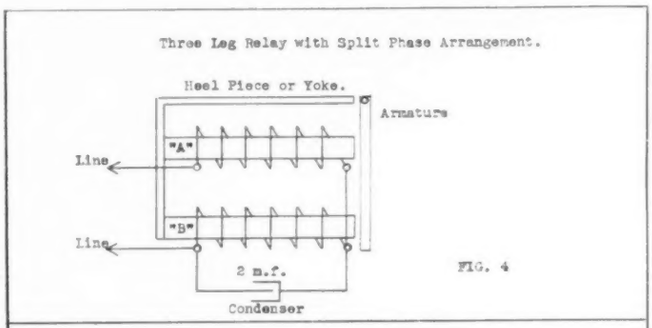


Fig. 4

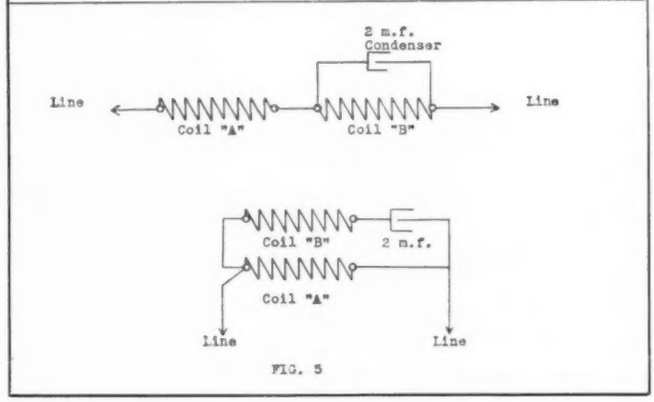


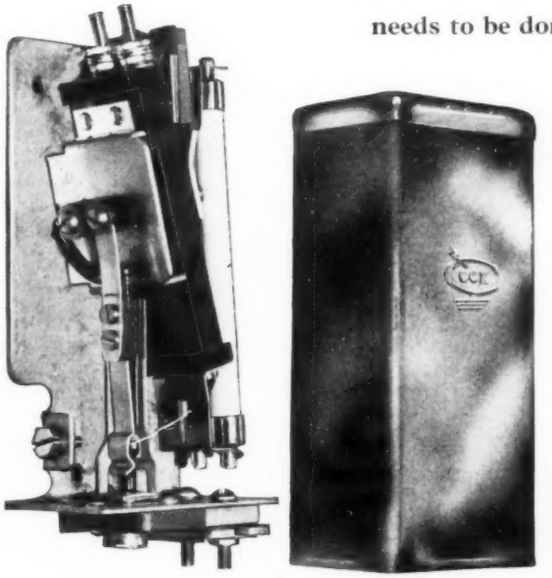
Fig. 5

First Choice . . . *FIELD and FRONT OFFICE*

Wherever telephone lines are strung, you will find Cook Electric telephone equipment first choice of both the men in the field and in the front office.

Cook Electric protection and distribution devices have the precise detail, the rugged durability, compactness and weather tight construction that only a half century of close understanding of an industry's needs can give.

Our engineers work in the field with linemen, maintenance men, plant men and executives. We hear their comments and receive their suggestions. We see for ourselves what needs to be done. Then we use every facility of our designers, our testing laboratories, our precision workers and machines to build the best unit for the job . . . and to keep making them better.



The Sentinel Pole Jack. *Especially designed for installation at munitions plants, airports, national park services, highway patrols. Compact and weatherproof.*

Cook Electric products are now proving their superiority under the rigorous demands of wartime service both in the armed forces and in civilian communications. When the war is over the many new developments of our engineers will be available to provide even greater efficiency to this amazing industry.

All telephone equipment manufacturers and supply houses distribute Cook Electric products.

COOK ELECTRIC COMPANY

2700 Southport Ave., Chicago, 14, Ill.

COOK ELECTRIC Company

Telephone Protection & Distribution Engineering Since 1897

To whom it may concern
only indirectly . . . . . .

The message shown on the following three pages is, of course, directed to Leich employees. Recently a telephone man saw this folder and said "Why not show this to operating men too, for after all the whole industry is fighting this war." So here it is.

Leich extends a most cordial invitation to all independent telephone men to visit representatives in Rooms 1784, 1786, 1788 and 1789 at the National Convention, Hotel Sherman, Chicago, on Oct. 14th and 15th.

CONTINUED

December 1942

Remember the day last winter when you had to buck the snow
and fight zero weather to even get to the plant?
And when you got there, the boss was even crabbier than usual—
everything went wrong all day—
and your job seemed a million miles away from helping to win the war?
Yeah, and when you got home that night,
there was no letter from that boy in service—
just the newspaper with the usual not-too-good war news
and a story telling about the big "dough" somebody was making in a
Cleveland plant. So when you went to bed with the
gas-coffee-meat-shoe-ration blues, no wonder you said to yourself
"Maybe I'm in the wrong spot —perhaps I should be
somewhere else, doing something else.

Sure, you remember that day or one mighty like it—
because all of us at Leich had days like that,
in fact, nearly every American war worker had days like that
in DECEMBER, 1942.

continued on following pages

"Tell the fellows at Leich"

continued

September 1943

Now it's September—
and looking back—maybe you did better than you thought last DECEMBER.
Perhaps it was in DECEMBER that you made the switchboards
that Maurice Markham has written about.

Maurice Markham, a boy from Stillman Valley, Illinois,
and a former lineman for the Mid-West States Telephone Company,
Rockford, wrote from his Marine base in the South Pacific
to his former co-workers as follows:

"What is new in the telephone business? Did a lot of jungle construction that sure was an experience -- not like building a line along an Illinois road. Besides the jungle, we had lizards; mosquitos (as big as flies); snakes and a few other good-for-nothing things to contend with. When you see some of the fellows from Leich Electric tell them we used their switchboards. They sure proved O.K. Could just about drop a bomb or shell on them before they wouldn't work."

Do you think that this boy whose very life depends

upon the equipment you make, wrote the above "just to be nice?"

Hell, No!

His "O.K." comes right from the heart—and pays your

workmanship the greatest compliment it could possibly receive.

December 1943?

When the tough days ahead come—in DECEMBER, 1943—

or before or after—let's keep Maurice Markham

and all the boys like him in mind. When tempers are short, when

the "blues" get you "down", when war nerves scream—

remember how important it is to these boys that

nothing keep you from doing the very best work you can—for them.

You'll never get any medals or Oak Leaf decorations for it—

and you certainly won't get rich. But this much is certain

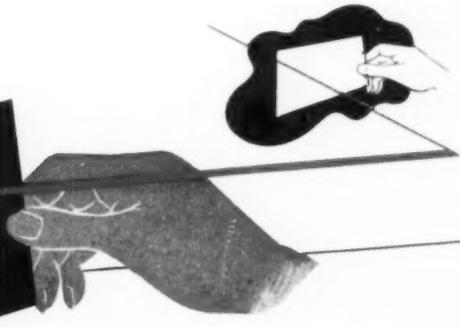
—if your Jim, our Bill, Charlie next door and

Jack across the street—and all the other Jims, Bills, Charlies

and Jacks, report back that Leich equipment is "O.K.", you'll have

the finest reward you will ever receive

this side of judgement day.



LEICH

manufacturers of telephones, switchboards and related apparatus since 1907

WEAPO
for

Newman Tree Trimmers and Pruners will help you keep your lines free and clear. Especially designed for fast, clean-cutting action with minimum effort.

For better work on cable repairs and construction, we recommend Drierite Desiccant, Alligator Cable Wrapping Cloth, Ruberoid Asphalt Paint and other fine materials for insulation and protection.

With these tools—Estwing Hammers, Yankee Screwdrivers and Klein Pliers—your linemen can work faster, do a more thorough, workmanlike job.

Equip your linemen with these better safety devices. Klein Safety Belts, Straps and Climbers are noted for their dependability under hard use.

Drop wire and line wire are scarce. You can make the most of what you have by using Nicopress Splicing Tools and Sleeves, a combination that produces splices stronger than the wire itself.

...PONS in the WAR
...or BETTER SERVICE...

You can save manpower with this one-man trouble shooter—the West Test Set. Locates all kinds of line faults with maximum speed and accuracy.

It pays to replace damaged or broken line and drop wire insulators. There are no more dependable products than these Hemingray and Whitall-Tatum Insulators, and Pearl Drop-Wire Brackets.

Save materials—save manpower—and "keep 'em talking." This is the wartime program of the telephone industry! Careful, painstaking maintenance will help you do all three. You cannot afford to discard worn-out or damaged items as you might in normal times; but you can keep your plant in top operating condition with modern repair methods and efficient maintenance tools.

On these pages, we show some specific products which we specially recommend for wartime maintenance. Put them to use, and you'll find they will help you extend the life of your plant through the war and beyond.

Ask our field representative for suggestions, too. He is in daily contact with problems similar to yours, and often has new and helpful ideas to offer, as well as information on newly developed maintenance products. His first job today is to help you meet wartime conditions. He'll be glad to work with you.

The Army-Navy "E" Pennant, with two stars for continued achievement in production, flies over the plant of Automatic Electric Company.

AUTOMATIC ELECTRIC

ORIGINATORS AND DEVELOPERS OF STROWGER STEP-BY-STEP MACHINE SWITCHING AUTOMATIC DIAL SYSTEMS

MAKERS OF TELEPHONE, SIGNALING AND COMMUNICATION APPARATUS
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Distributors in U. S. and Possessions:
AUTOMATIC ELECTRIC SALES CORPORATION, Chicago, U. S. A.
Export Distributors: INTERNATIONAL AUTOMATIC ELECTRIC CORPORATION

Rigid Specifications

HELP CUT WARTIME USE OF DROP WIRE

Monotype Drop Wire is widely recognized as the quality standard of the industry. Such eminence is not accidental but rather the result of long, tedious weeks of testing, comparing, trying and judging. Finally the nearest-to-ideal combination of materials and methods was evolved.

Eleven separate specifications are rigidly adhered to on insulation alone. The conductor is Copperweld which must pass nine exacting tests and is well-known for its great strength, resistance to elongation and torsion, as well as its high conductivity. Copperweld also helps the conservation program by using relatively small amounts of copper while giving the advantages of solid copper wire.

Obviously quality of this nature is more valuable than ever during wartime. It serves a threefold purpose by restricting replacement, saving service calls, eliminating irritating delays and failures. Your use of Monotype Drop Wire is a sound business move as well as practical patriotism.

MONOTYPE DROP WIRE

MANUFACTURED FOR

AUTOMATIC ELECTRIC COMPANY
By GENERAL CABLE CORPORATION

DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET . CHICAGO, ILLINOIS

Electronic Postwar Possibilities Demonstrated At RCA Laboratories—

That developments in the postwar world in the electronics field will assume major importance was demonstrated "under wraps" to a group of newspapermen and magazine writers in early August at the RCA Laboratories at Princeton, N. J. Because of national security, many discoveries in electronics and radio could not be shown, but what could be revealed pointed to the peacetime applications in the home and in industry of many devices not even in the blueprint stage a few years ago.

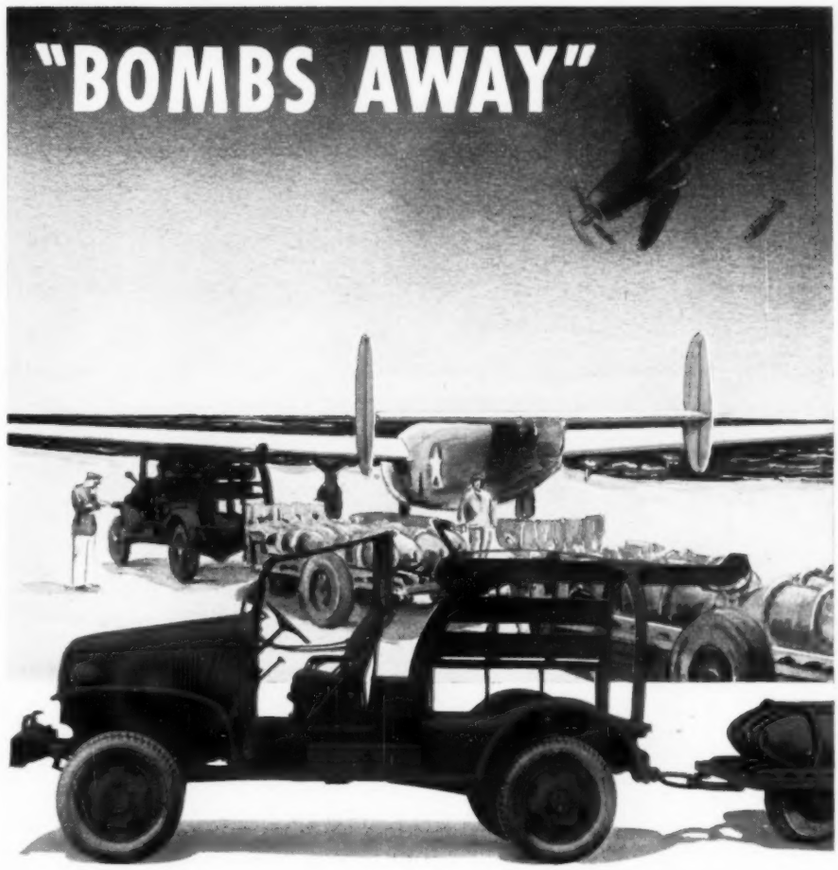
Several such devices are new and improved transmitting and receiving tubes for television. Such tubes, one a water-cooled screen grid anode for 5 meter television transmission, are being used now only in the experimental phase, and will be further refined and perfected for peacetime application. Although no where near the ordinary degree of research on television apparatus is in progress now at the RCA Laboratories, B. J. Thompson, Associate Director of General Research, explained that this phase of activity is not being entirely neglected.

The electronic miracle of radio-generated heat — radio-thermics — was demonstrated in various applications ranging from cooking of foods such as marshmallows, which toast in three seconds, to an electronic riveting gun used to explode mushrooming rivets filled with a powder charge through a shot of radio-generated heat. Another use of radio-heating valuable to the postwar textile industry, is the drying of rayon threads in a fraction of the time used by ordinary methods. Such radio-heating, also used to pin together plywood sheets through measured shots of radio power, may be used in connection with any material which is a poor conductor of electricity.

RCA Vice-President Otto S. Schairer, in charge of the Laboratories, predicted a bright future for the electronics field, and said that RCA has already planned a tremendous expansion of its laboratory facilities after the war.

Western Electric Opens Massachusetts Plant

The Western Electric Company, which employs approximately 75,000 people in its three main manufacturing plants at Kearny, N. J., Chicago, and Baltimore, and in distributing houses throughout the country, has recently added to its facilities by establishing a new plant in Haverhill, Mass., in which from 1,500 to 2,000 additional people will be employed. It is expected that women will be employed at the rate of approximately 60%.



"AMERICAN" *Bomb Platform* BODIES

Are Helping Uncle Sam's Boys Load and Transport the Bombs from Magazines to Planes

● The illustration above shows the simple, time and labor saving, efficient method adopted by the U. S. Ordnance Department for the loading and transportation of bombs from magazines to planes. "American" is proud of the part it has been able to take in the solution of this important problem by the manufacture of the Bomb Platform Bodies Used.

Because of the urgency for war equipment "American" engineers have had but little time to develop the new models envisioned. So for the period immediately following the peace in order to take care of the pressing demands, for new equipment to replace obsolete, "American" plans to deliver as fast as truck chassis are available equipment of the same time-tested design as that built before the war, plus many new construction features that make for longer service and less maintenance.

Many Utilities are today setting their sights for post war operations. When it comes to planning construction equipment "American" engineers are ready to aid you with specifications and designs, of course entirely without obligation.

Some Reasons Why "Americans" Are TOPS:—

Correct Design • Superior Quality Construction • Comfort • Convenience • Safety • Endurance • Low Operating Cost • Fine Appearance

THE American COACH & BODY CO.

PUBLIC UTILITIES EQUIPMENT FOR MOTOR VEHICLES

YOUR QUESTIONS ANSWERED FREE

Line AND Desk

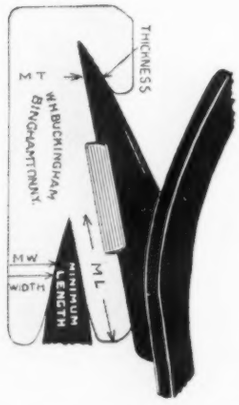


Fig. 1-A—Showing Method of Using Buckingham Guage in Sharpening Climber Gaffs.

Q. You recently published instructions for sharpening climber gaffs. Is there a gauge that we can use for determining the proper shaper of the gaffs when sharpening them? How would this gauge be used?

A. Yes, a tool has been developed for gauging the dimensions of climber gaffs. Figure 1-A illustrates a gauge manufactured by W. H. Buckingham that is designed to guide linemen in sharpening pole climber gaffs and shows the minimum dimensions at which the gaffs may be used. Markings on the gauge are as follows: M.T. —minimum thickness; M.W.—minimum width; and M.L. — minimum length. The same outside angle of the gaff to the leg iron of the climber must be maintained as the gaff wears, as indicated by the outside edge or ridge of the gaff fitting the gauge from heel to point.

The manufacturer also furnishes instructions for sharpening the gaffs, part of which are given here to supplement data previously published in this column. In Figure 1-B, arrow No. 1 shows the outline of a new gaff and the correct finish of the point. Arrow No. 2 indicates the lines that should be followed in resharpening the point as it wears down. It is important not to file the gaff on the outside of the point only, since a gaff sharpened in this manner tends to cut out in climbing. If it is necessary to remove any of the outside edge of the gaff, always file from the heel to the point.

Fig. 1-B—Lines to Follow in Resharpening Climber Gaffs.

Q. We have several knife type treetrimmers with extension handles for cutting high branches. We find that the spring lock on the handle does not hold very well and sometimes breaks off. What substitution can we make for the spring lock that will keep the handle from disengaging?

A. We suggest that you make use of a special screw lock for replacing a defective spring lock as illustrated in Figure 3. The stock of the tree trimmer is inserted in the ferrule of the extension handle and the fillet head screw is backed out with a screwdriver until its head just protrudes through the corresponding hole in the ferrule. To disengage the handle, the screw is turned down all the way to allow the handle to be slipped off the stock. This method does away with the nuisance of the screw losing out as would happen if an ordinary removable screw were used.

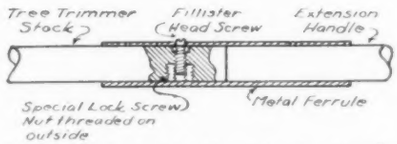


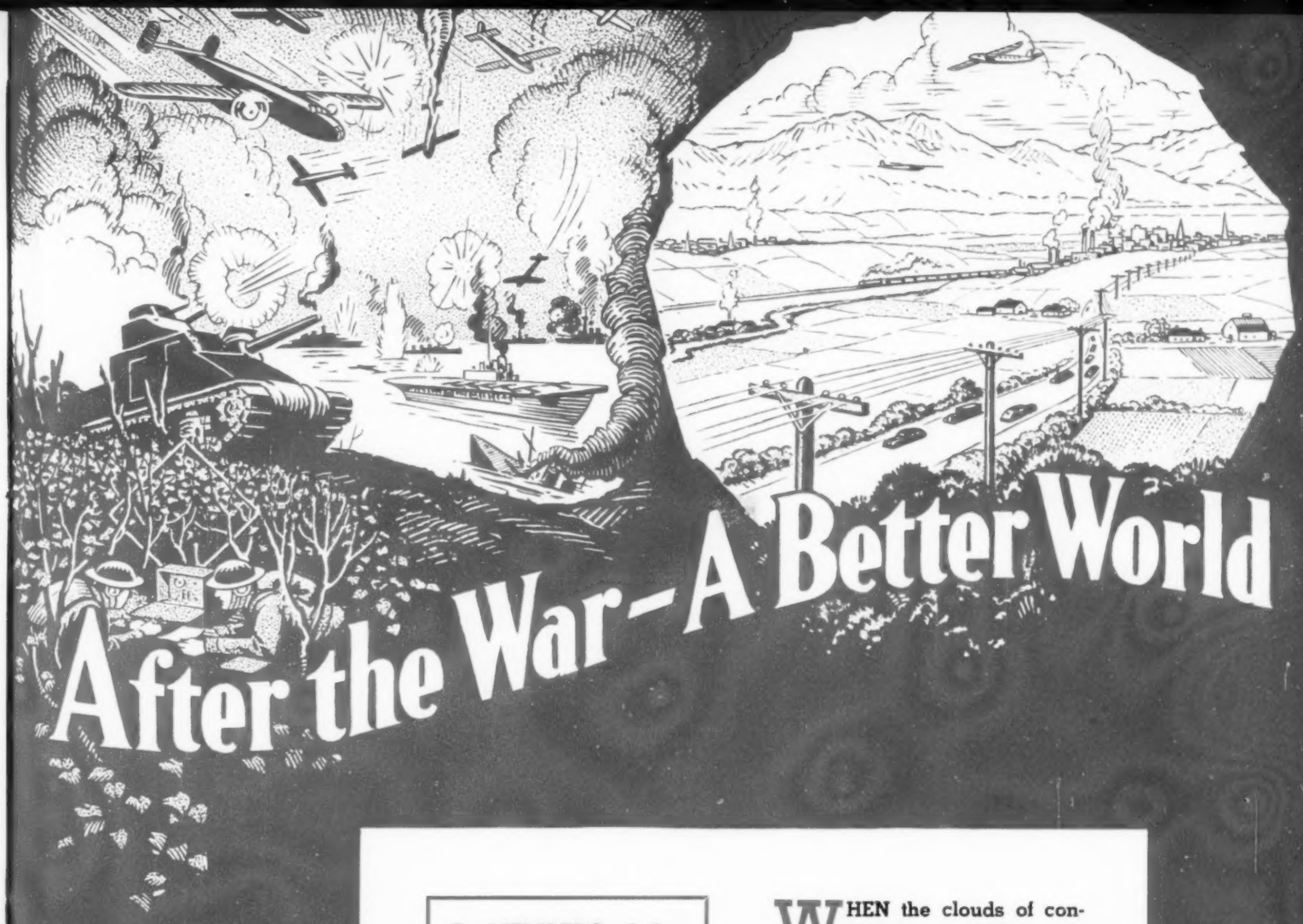
Fig. 3—Method of Locking Extension Handle on Tree Trimmer Stock.

Q. We have a metallic farm line which parallels a 33,000 volt power line for 7 miles. Our linemen get a disagreeable shock whenever they are in contact with ground and happen to touch one of the telephone wires. Is there any way this condition can be corrected?

A. The voltage standing from telephone line to ground can be eliminated by the use of a **drainage coil.** A drainage coil is merely an inductance with its center tap connected to ground. Due to the high impedance of the inductance to voice currents it does not materially affect transmission, but due to the differential action of the windings, it can act as a low impedance path to ground for the induced power currents present on the line. The voltage reduction results from the fact that the path over which the power currents must pass; namely, the inductive and electrostatic coupling between the power and telephone lines is exceptionally high impedance, hence, if we draw current through this high impedance path the resulting IZ drop reduces the voltage left on the telephone line to negligible value. In order to successfully use drainage coils on telephone lines without setting up objectionable noise in the line itself, the two sides of the telephone circuit must be accurately balanced. That is, have the same impedance characteristics. This means that care must be taken to avoid bad joints which would cause the resistance of one side to be higher than that of the other.

Questions Answered FREE

We welcome questions from every reader. If quick direct mail reply is needed please enclose stamped addressed envelope.



After the War—A Better World

Drop Wire
Bridle
Interior
Tree
Ground
Switchboard
Pothead
Cable Terminal
Instrument
Fixture
Buried Wire

◆

Special Plastic and Synthetic Wires

To MEMBERS of the U.S.I.T.A.

Your continued Cooperative Spirit will HASTEN Victory

★

Congratulations and Best Wishes for a Successful 47th Annual Convention

WHEN the clouds of conflict have rolled away, the millions who return to peaceful pursuits will find a better world awaiting them. A world of higher standards of living—and improved ways of doing things.

Then AS NOW--

it will be our pleasure as well as our duty to see that new developments in material and technique are available to the Independent Telephone Industry.

A NAME THAT COMMANDS RESPECT

ACORN INSULATED WIRE

ACORN INSULATED WIRE COMPANY, INC.

225 King Street, Brooklyn, N. Y.

LEICH SALES CORP., 427 W. Randolph St., Chicago

LINDSAY SUPPLY CO., 4815 Superior Ave., Cleveland

TRADE
VULCAN
MARK
ELECTRIC
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TOOLS
UNDERWRITERS APPROVED

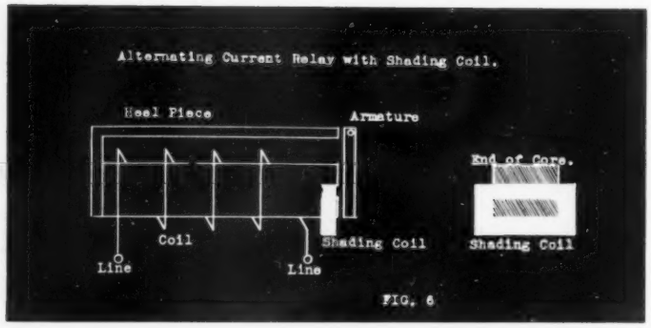
Standard in the Telephone Industry for Thirty Years.
14
STANDARD SIZES OF
SCREW
TIP
AND
PLUG
TIP
Type of ELECTRIC SOLDERING TOOLS
with
VULCAN'S
FINEST FORGED
COPPER
TIPS
★
Rheostats & Thermostats
•
Controlled Soldering Tool Holders
•
Electric Solder Pots - Ladles

VULCAN ELECTRIC CO.
DANVERS, MASSACHUSETTS

Telephone Relays for Alternating Current

(Continued from page 46)

Fig. 6



theory, a film of resistance is built up between the dissimilar surfaces when an electrical stress of a certain polarity is presented, but present a very low resistance to the opposite polarity. Thus they form a very good valve. They might well be likened to a check valve in a water pipe. Water is allowed to flow in one direction, but is blocked if it tries to flow the other way.

THE resistance of such a rectifier will vary with the number of discs included in the pile. The carrying ability in amperes depends on the cross section area of each disc. A sample rectifier measuring about ¾" in diameter had 11 discs assembled in the unit. Measuring with 135 volts Direct Current, the resistance was found to be almost infinity. Measuring the other direction, the total resistance was about 76 ohms with 135 volts. It is interesting to note how the resistance was divided between the discs. Starting from one end, and measuring first one disc, then two, then three, the results were as follows.

1—10 ohms. 2—16 ohms. 3—24 ohms. 4—30 ohms. 5—37 ohms. 6—43 ohms. 7—50 ohms. 8—50 ohms. 9—64 ohms.— 10—70 ohms and 11—76 ohms. Thus the device presents a very low resistance in one direction and a very high resistance in the other. Such a device alone will only allow one half alternation to pass, and the energy of the other half is lost.

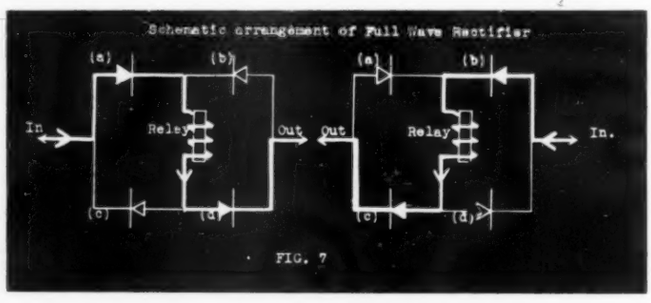
In certain cases it is desirable to utilize the energy of both alternations. So to get this, a bridge arrangement is used as shown in Fig 7.

In the left hand schematic, there are four rectifiers connected to a telephone relay. Suppose an alteration enters the bridge from the left, at the point marked "In", it flows through (a), through the relay, through (d) and out.

In the right schematic an opposite alternation enters the bridge at the point marked "In", through (b), through the relay, through (c) and out. It will be noted in each case the flow through the relay was in the same direction. Thus both alternations are used, and the relay will be held quite firm.

AN application of a rectifier unit to a line signal is shown in Fig. 8 and 9. In the one case, the rectifier "R" is parallel with the line coil. This means that one half cycle is allowed to flow through the coil unhampered, while the other half cycle is shorted out because the rectifier presents a low resistance to that polarity. In Fig. 9 the rectifier is in series with the line coil. In this case, one half cycle is blocked entirely, and the other flows through the rectifier but has the resistance of the line coil in series. This is easier on the ringing supply than the shunt method.

Fig. 7



Every branch of the Armed Services uses the telephone. No. 7 of a series, Air Forces.

Won't you help him?

This pilot is one of millions of men in the armed forces who need equipment that only *your* dollars can buy. Not just a few dollars now and then—but *regularly*—*every dollar you can possibly invest in War Bonds from now till Victory!*

Over the interphone comes the bombardier's voice, "Bombs away!" Some day, some pilot will hear these words as the war's last bomb goes down. He will bring his crew home to their happiest landing—in a world where all men may look to the skies, not in fear of death, but in thankfulness for freedom.

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IN WAR...ARSENAL OF COMMUNICATIONS EQUIPMENT.

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This light weight, easy to use tree trimmer shears downward, taking advantage of gravity which spreads the cut behind the knife. There is no danger of wedging or choking. It's leverage ratio permits 1½ inch cuts with amazing ease. Extra extensions are spliced on by means of special ferrule and spring release. Get the complete details before you invest in tree trimming equipment.
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CENTRALIA, MISSOURI.

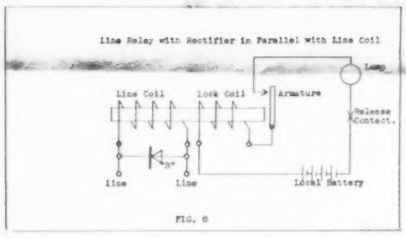

Fig. 8

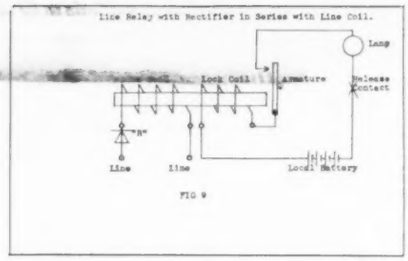

Fig. 9

In both arrangements there is a holding or lock coil, connected to a local battery, say at a P.B.X. One precaution has to be observed. The polarity of the rectifier must be such that the magnetic pull of the line coil due to the rectified Alternating Current, must be in the same direction as the pull in the lock coil due to the local battery. It is most convenient to reverse the polarity of the rectifier, as the polarity of an exchange battery is usually a fixed value. This type of relay makes an admirable line signal as shown in Fig. 9 especially.

The writer stumbled onto a rather unusual arrangement while trying to get a relay that would operate absolutely silent, for use in a radio studio where noise was taboo. The arrangement in Fig. 10 was the result. A standard line relay coil used for a line switch in an Automatic exchange provided the answer. This particular coil is 500 ohms resistance, and has a heavy copper slug on the armature end of the coil. A dry disc rectifier was connected in series and presto, a silent A.C. Relay. The spring adjustment was very easy and simple. And noise. There was none. Later two coils mounted in parallel similar to the assembly used in an ordinary telegraph sounder, or the vertical or rotary magnets of an automatic switch were found to have sufficient power to snap in heavy contact springs to control a 220 volt circuit in a 1000 watt radio transmitter. An emergency relay was assembled to replace one that burned up, and could not be replaced under 6 weeks. The relay shown in Fig. 10, is I believe, the best A.C. Relay assembly of the lot, and uses standard material.

AS a voltage alarm relay, this type is absolutely silent and positive in action. In toll selectors where the toll operator starts the ringing of the subscribers bells, with a preliminary application of ringing current from her cord circuit, this relay with a rectifier of four discs in series, makes a wonderful improvement in the operation of such a switching arrangement.

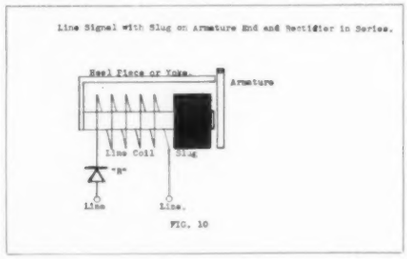

Fig. 10

A coil with the slug on the heel end has a tendency to chatter, but one with the slug on the front end does the trick.

The foregoing discussion of A. C. Relays is rather brief, but deals with the principal types found in the average telephone exchange. There are other types not discussed which are obsolete and of little use.

— THE END —

★ Our entire facilities have been devoted to supplying our armed forces with BIG BEAMS. In supplying Uncle Sam we have discovered and developed many additional industrial and commercial uses for our unusual Portable Hand Lamp — for instance, on emergency repair trucks, repair crews, service cars, around switchboards and telephone control equipment — and many other uses in line construction and maintenance where powerful auxiliary or standby lighting is ready for immediate service. Send for our descriptive bulletin which gives the complete story of BIG BEAM.

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Join the Independent Pioneers
See J. K. Johnston at the Convention!

Files Suit to Collect Back Tolls From Oklahoma-Arkansas Co.

SEEKING to recover long distance tolls during the period from March, 1941, and July, 1943, the Southwestern Bell Telephone Co. filed Sept. 17 in the Federal District Court for Eastern Oklahoma at Muskogee a suit to collect approximately $24,000 from the Oklahoma Arkansas Telephone Co., whose headquarters are at Poteau.

The Southwestern Bell contended that the Oklahoma-Arkansas company owes it that sum for long distance service furnished by the Bell company to customers of the Independent at Poteau, Heavener, Howe and Wister, Oklahoma. The complaint, filed with the court, stated that the toll service and connection of long distance lines with the Oklahoma-Arkansas company followed the terms of an arrangement prescribed by the Oklahoma Corporation Commission several years ago. It charged that the present controversy the Poteau company is withholding revenue to which the Southwestern Bell is entitled under that order. The exact amount for which suit was entered was $24,428.92 as of July 20, 1943.

The Oklahoma-Arkansas company, which under the presidency of the late I. H. Nakdimen had conducted a vitriolic campaign against the A.T. & E. and Southwestern Bell for many years before state commissions, the Interstate Commerce Commission, the FCC, in the courts and in Congress, was alleged by the Southwestern Bell in its bill of complaint to be "hopelessly insolvent." This insolvency was asserted in the bill of complaint to have resulted "primarily and largely from the mismanagement" of the company by I. H. Nakdimen through "fraudulent conspiracies carried out by him***in disregard and violation of the right of the public generally and all creditors." The complaint also alleged that the present head of the company, Hiram Nakdimen, son of the deceased president was seeking to continue the "fradulent plan***to cheat this plaintiff and others."

The Southwestern Bell's bill of complaint also asked the Court to appoint a receiver to take over the properties of the Oklahoma-Arkansas Telephone Co. The receiver would be charged with operating that company until it can be sold. The bill of complaint was filed by E. W. Clausen, Southwestern Bell General Attorney, and John H. Cantrell, Oklahoma Counsel for Southwestern Bell. W. S. Miller, Oklahoma general manager for Southwestern Bell attested to the court complaint.

That's too Close a Call

As a U. S. Army Signal Corps man plugged in a call on a field switchboard during an air raid on Guadalcanal, the telephone cord was severed between his hand and the board. This neat job was done by a piece of shrapnel, which he now carries as a souvenir. It didn't stop his call—he just plugged in on another line.

Petition For New Lines

The petition of the Finger Lakes Telephone Corporation to the New York Public Service Commission for authority to construct telephone lines in the towns of Spafford, Marcellus and Skaneateles, N. Y., and for a certificate of public convenience and necessity was scheduled to have been heard at Syracuse, October 1.

HEMINGRAYS *ENDURE*

Put These Money-Savers On All Your Lines

HEMINGRAYS don't tax your operating budget. They actually save money because they outlive poles, hardware and crossarms; "keep up their money-saving efforts for 50 years"—one prominent utility reports.

A SECRET glass "batch-mix"—climax of 87 years of experience—plus Owens-Illinois quality-controlled production, results in Hemingrays free of voids, stresses and strains . . . so homogeneous that sudden changes of temperature leave them unimpaired to work perfectly through sun, rain, hail, snow and sleet.

3 FAVORITES ON RURAL LINES—Sturdy, all-purpose Hemingray Number 16. Hemingray Number 42, with its long leakage path keeping "toll" lines trouble-free. Number 9 (illustr.), with its drip point petticoat for fast moisture runoff. Get samples.

LOW IN COST and long in service-life...sold only by principal jobbers

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Because Raytheon RectiChargeRs keep batteries fully charged . . . are entirely automatic in operation . . . have no moving parts . . . and require no maintenance, they are ideal for unattended locations. Simply plug them in . . . adjust the charging rate and from then on RectiChargeRs will—keep batteries charged . . . prevent overcharge and undercharge . . . eliminate voltage variations . . . increase battery life . . . reduce battery maintenance and inspection to one or twice yearly.

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USITA Convenes in Chicago

(Continued from page 40)

G. B. Foscue, chairman, Coordinating Committee

want to know of the job this committee has done in coordinating the activities of the National association and the various State associations. Mr. Foscue has attended practically every state convention held since his appointment as Chairman of this committee and has an excellent bit of liason work that is producing gratifying results.

The recent meeting of the NARUC in Chicago last month provided much to work on in the way of depreciation and resulted in Chairman Thomas A. Boyd, New York, and the recently revived Depreciation Committee being called to attend the session. The letter from Mr. Boyd reproduced in another part of this issue will give you more information of what to expect in this committee report.

President Porter will bring you his report as Chairman of the Post-War Committee immediately following the report of Mr. Boyd and his Committee. We have mentioned earlier of the belief of Mr. Porter that post-war planning is perhaps our most necessary activity at this time. It is surmised that Mr. Porter will make an appeal that our industry start doing something on post-war as it is now too late to continue thinking without action.

The election of directors will be handled during this session. A report of the Nominating Committee will be heard and the election will follow. The Board of Directors will meet with those newly elected during the lunch recess when the officers of the Association year will be elected. Those directors whose terms expire this year are:

W. M. Angel, C. D. Brorein, Alden L. Hart, E. C. Blomeyer, F. O. Cuppy, M. K. McGrath, F. E. Bohn, Ray Dalton, R. E. Shotts, H. V. Bozell C. C. Deering, Samuel Tucker, O. M. Vaughan.

Much has been done by the Association Tax Committee during the past 12 months and the Chairman, H. V. Bozell, New York, has addressed several state associations on that subject. His report will be quite thorough and give much needed advice to those companies that do not have a special department on taxes.

Chairman V. E. Chaney, Ft. Wayne, Ind., will bring the convention up to date on the Continuing Property Record situation that has had some activity since the report made during the Spring Conference in April of this year. The Chairman of the Accounting Committee, Ranford Dunlap, Ft. Wayne, will re-

R. A. Phillips, member, Executive Committee

D. KELLY McNISH
Chairman, Commercial Committee

My dear Ray:

At the present time I am gathering information from the other members of the committee to get a consensus of opinion as to what should be incorporated in the report of the Commercial Committee.

The subject will be "Commercial Departments in War and Peace." As the rules for our war-time policies are pretty well laid down for us by the Government agencies, I feel that the greater part of the program will deal with post-war problems,—such as post-war credit; post-war retention of business, should there be a let down in general business; a consideration of toll usage which I feel will continue at a high level, as millions are now using long distance who probably never even wrote a letter before; also personnel matters and the placing of employees now in the armed services when they are mustered out. These are but a few of the things I have in mind, and no doubt when I hear from the other members of the committee, valuable suggestions will be made which should enable the committee to have a report which should be of some interest,—at least that is our aim and object.

I am bringing quite a few members of my organization, and know of some others that are planning to do likewise. The Convention is always a pleasant interlude for me in life's busy world, and I would not miss it for anything, as I feel it is one of the high spots of the year for all Independent telephone operating men.

With highest esteem and kindest personal regards.

Very sincerely yours,

Kelly McNish
Chairman, Commercial Committee.

port for his committee as the concluding feature of the forenoon. Discussion open for all will then ensue.

The afternoon session of the final day will be reserved for the three operating committees on Traffic, Commercial and Plant. W. C. Darrow, Tarboro, N. Car. heads the Traffic Committee and will report on the subject: "Meeting Current Traffic Loads." This subject alone is of sufficient importance to warrant attending the convention as it is an every day problem that is increasing with the wartime traffic load as our economy goes deeper into practices with little or no new equipment to fall back upon.

Kelly McNish, Bristol, Va., delivered a very popular paper at the Spring Conference after being made Chairman of the Commercial Committee. His report for the annual convention will through necessity have the same keynote of wartime operations. The final report will be presented by B. C. Burden, Chairman of the Plant Committee and engineer of the United States Independent Telephone Association. Our regular readers will also remember his report at the Spring Conference as we reproduced his address in full immediately after it was presented. We intended to reprint his coming report as we expect it will be of such importance that our readers will want a permanent record.

After the discussion following these Committee Reports the unfinished business will be handled and adjournment in order.

We repeat, due to wartime necessity there will be no exhibits by manufacturers and suppliers to the industry. There is no banquet scheduled as in former years although there will be plenty of opportunity to join with friends in private parties.

— END —

About Mail To The Armed Forces

The continued piling up of inadequately and improperly directed mail, destined for soldiers overseas, necessitates calling attention of the public to the importance of complete addressing of such mail, the War Department has announced.

Hundreds of sacks of mail are being held up daily because senders have failed to comply with instructions. This mail consists chiefly of newspapers and magazines, although much personal mail is included.

In addressing mail to a soldier it is necessary to give his rank, name, Army serial number, organization and Army Post Office number. By organization, the War Department does not mean the Army or division to which the soldier belongs, but rather the unit. Following is a model address:

Pvt. John Doe, ASN 1234567890,
Battery B, 227th Field Artillery Battalion,
APO 29, c/o The Postmaster, New York, N. Y.

Whenever feasible, the Post Office Department will return inadequately addressed mail to the sender.

With more than 10 per cent of the mail destined for overseas incorrectly or insufficiently addressed, locator units of the Army Postal Service have been heavily overtaxed. Proper addressing will help ease this load. While periodicals weighing up to 8 ounces are permitted for overseas mailing, families and friends of soldiers should send clippings instead whenever possible. Valued cargo space thus may be saved.

Christmas presents should be mailed between September 15 and October 15. DO IT NOW!

—•—

Telephone plant investment totaling in 1942 more than five times what it was in 1917 during World War 1 is reported by the Bell System.

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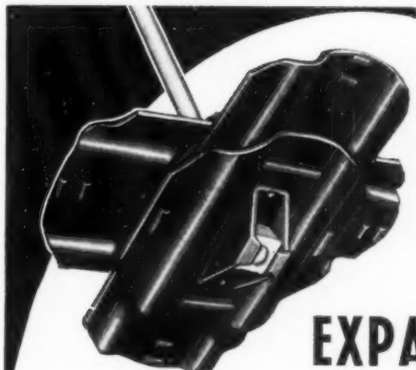

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CHANCE STEEL EXPANDING ANCHORS

- The all-steel construction enables these anchors to withstand severe punishment without danger of breaking.
- They expand on the average to more than 2½ times their size, giving extra area in solid earth.
- Rigid connections and deep grooves prevent rocks or roots from deflecting blades during expansion.
- The blades spread in opposite directions, equalizing strain and eliminating side twists.
- Sharp edges of blades cut quickly into the solid earth.
- Can be easily installed at any angle.
- Made in two and four-way types and eleven sizes for holding power ranging from 7,000 to 42,000 pounds.

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WOOD OPERATOR CHAIRS

No. 222-FR

1. Form fitting back and deep, saddle seat upholstered in genuine leather over curled hair pads.
2. Easy, "floating" swivel mechanism.
3. Available in 4 seat height ranges: 18 to 22"; 21 to 25"; 24 to 28" and 28 to 32".
4. Solid maple frame with all joints glued and dowelled.
5. Wide choice of leathers and finishes.

Sold by Telephone Supply Houses
Manufactured by
STURGIS
POSTURE CHAIR COMPANY
Sturgis, Michigan

Highlights of the Communications News

(Continued from page 42)

decentralization so that its three field procurement districts of Philadelphia, Chicago and Dayton-Wright Field have responsibility for placement of contracts and the following-up of production by prime contractotrs.

Telegraph Merger

THE sanction of the domestic land-line telegraph merger so that Western Union and Postal Telegraph can consolidate, means that Western Union immediately commenced the fusing of the Postal management and administrative officials with its own executive and official staffs and that Postal commercial and operating employees at once started to be instructed in Western Union methods and procedures. The actual physical integration of the plant and even closing of duplicate offices will come at a slower pace although termination of certain duplicate offices of the obvious types was a first order of business.

For the telephone industry the future negotiations in regard to the handling of Teletypewriter Exchange Service and telegraphic private lines of the Bell System and Independents which also get under way formed a subject of importance, but the agreement on this subject still has to be worked out.

OPA in Rate Cases

THE OPA Transportation and Public Utilities Division, which is facing a test of its powers over utility rates before the U. S. Supreme Court and the Michigan Supreme Court, has been active recently in three rate increase cases of Independent Telephone companies before state commissions. One of these companies, the Illinois Central Telephone Co., posed the interesting issue for a rate increase that it had to meet a boost in wages amounting to $35,000 annually which had been ordered by the War Labor Board.

The test of the OPA's powers in the utility field will be on its appeal from a Circuit Court decision to the U. S. Supreme Court after the former tribunal had held the OPA could not interpose its judgment in the Washington Gas Light Co. rate case against that of the District of Columbia Public Utilities Commission. The Michigan Supreme Court is going to rule on whether the OPA had authority to intervene before that state's commission on the side of the City of Detroit which had sought a reduction of electric light rates in that municipality.

In regard to the Illinois Central Telephone Company's petition for an increase in telephone rates, the OPA moved in its intervention petition before the Illinois Commerce Commission for a dismissal of the company's request for the rate boost on the grounds that to seek higher rates to compensate for increased wages restricted the state commission's functions.

The OPA Division opposed in a brief to the Nebraska Commission a proposed $2,055 rate increase of the Hooper, Nebr., Telephone Co. which claimed it needed the higher rates for the reconstruction of its plant. The company had depicted its plant as having fallen into disrepair and its main wire facilities reaching a point of breakdown. The OPA Division contended in its brief that the rebuild-

Chicago Welcomes
the United States Independent
Telephone Association

HOTEL SHERMAN — OCTOBER 14th & 15th

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ROTARY Luncheon every Tues.
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LIONS Luncheon every Thurs.
EXECUTIVES Luncheon every Friday
SHRINERS Luncheon every Wed.

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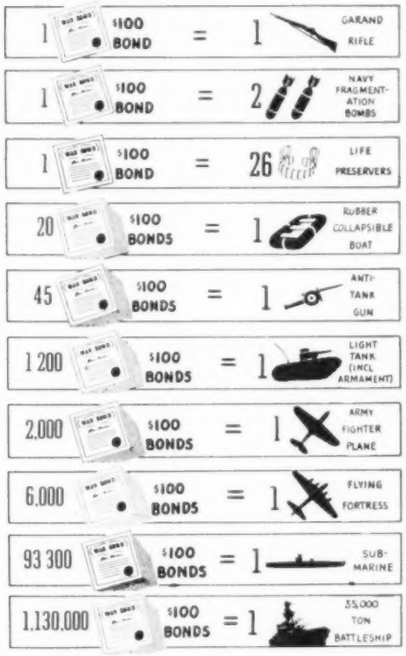
(ONE $100 BOND COSTS $75)


1 $100 BOND = 1 GARAND RIFLE
1 $100 BOND = 2 NAVY FRAGMENTATION BOMBS
1 $100 BOND = 26 LIFE PRESERVERS
20 $100 BONDS = 1 RUBBER COLLAPSIBLE BOAT
45 $100 BONDS = 1 ANTI-TANK GUN
1 200 $100 BONDS = 1 LIGHT TANK (INCL ARMAMENT)
2,000 $100 BONDS = 1 ARMY FIGHTER PLANE
6,000 $100 BONDS = 1 FLYING FORTRESS
93 300 $100 BONDS = 1 SUB-MARINE
1,130,000 $100 BONDS = 1 35,000 TON BATTLESHIP

ing of the plant should be made out of capital and not out of revenues. The small Independent company, it was claimed by the OPA, was showing a 72% return on its 1943 rate base which was an increase of 34% over its 1942 return and on this basis the reconstruction, it was contended, should be made out of capital.

A victory was claimed by the OPA Division in another action involving the United Telephone Investment Corporation and its operating subsidiaries in Indiana which had requested a rate increase. The OPA intervened in this case which dates back to 1941 and which resulted in an investigation of these companies by the Indiana Commission, was notified by the latter commission that instead of granting a rate increase a rate reduction of approximately $6,000 annually was ordered by the state regulatory body.

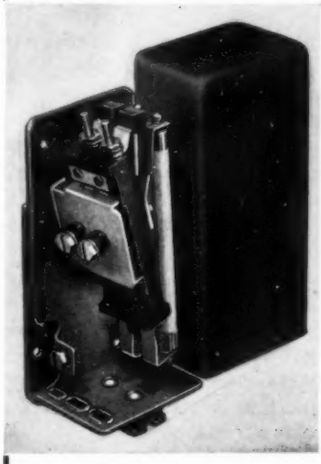
FCC-N. Y. Telephone Co.

THAT the purchases by the New York Telephone Company of outside toll plant and instruments from the American Telephone & Telegraph Company in 1925-28 were entered in the accounts of the former company at a price not in excess of the fair and reasonable structural value of the property in accordance with the System of Accounts of the Interstate Commerce Commission then in effect was emphasized to the FCC by Edward L. Blackman, New York Telephone Co. Special Counsel, in an oral argument on the Commission's proposed report Sept. 22. The FCC in its proposed report had held that an excess of $4,166,510.57, representing the difference between the price paid by the New York Co. and the original cost of the property as carried on the books of the American Company at the time of the acquisition should be charged against the surplus of the New York Company which should be required to reduce its asset accounts and to increase its depreciation reserve account by that amount.

The arguments of Mr. Blackman encountered considerable questioning by the Commissioners, especially FCC Chairman James Lawrence Fly. The New York Telephone Co. counsel appeared to be building up a record for a possible court test of the FCC findings on the accounting in regard to these acquisitions of property which had occurred over fifteen years ago.

Mr. Blackman, at the outset of his argument, assailed the findings in the FCC proposed report that the prices paid by the New York Telephone Co. to the American Company were improper. He brought out that the accounting and the transaction at the time were in strict accord with the law

COOK SUB-STATION PROTECTORS



BUILT TO "TAKE IT"
. . . The Type R Is New in Sub-Station Protector Design

The Type **RO** (as illustrated), is for outside mounting and is equipped with a bracket and heavy zinc weather hood. The heavy steel bracket will appeal to those telephone engineers and maintenance men who want equipment that can take quick, rough handling and subscriber abuse without danger of breakage.

The Type **R** Sub-Station Protector Mounting has a higher resistance to breakage from the shocks of severe electrical discharges. They are equipped with heavy studs for connecting drop wires and ground. All structural parts, and the heavy hood and bracket of the Type **RO** are grounded.

The Type **RI** (without hood), is for inside mounting.

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Consider the "LITTLE GIANT" Slack Puller---"The Superman Tool"

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CABLE SPINNING EQUIPMENT CO.

- 1 man can pull same slack in 45 seconds as 2 or 3 men can in 15 minutes using old methods! Weighs only 14 lbs.
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- Write for folder illustrating and describing Cable Spinning Equipment and the savings effected through its use.

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H. V. BOZELL,
Chairman, Committee on Taxation

Dear Ray:

Replying to your inquiry as to what may be featured in the Tax Committee's report to the convention next month, I think the general tenor of our report will be directed toward certain inequities of the present tax structure, which become so much more apparent and discriminatory at the present high levels of taxation.

Without expecting complete correction during wartime, we intend to point to the inequity of double taxation on earnings from business done through the corporate form. Since it is probable that this inequity cannot be entirely removed during wartime, we can ot least appeal for changes in the tax structure which will minimize those inequities, for example, by an extension of credit for dividends paid to include at least a partial credit for common dividends as well as the present credit for preferred dividends in calculating surtax net income.

We hope also to discuss an amendment to the present preferred dividend credit section to extend that credit—at least to refunding preferreds issued subsequent to October 1, 1942; and we believe the present provision unfortunately, without intent, tends to freeze the present structures of those companies having preferred stock. There are also certain well-known inequities in the provisions regarding the calculation of excess profits net income, particularly as applied to utilities. We propose to suggest a third alternative method of figuring this net income, which we believe will be in the interest of the independent telephone companies which are in the excess profits class.

The subject of taxes is not a simple one, and I hope that the Committee's discussion, plus questions and discussions from the floor at the convention, will help us all in understanding the tax problems as they affect Independent telephone companies and will assist the Committee in crystallizing the arguments which it will probably make before the Ways and Means Committee of the House of Representatives shortly after the convention, since we understand that public hearings on further amendments to the Revenue Act will start before that committee early in October.

Yours sincerely,
Harold V. Bozell
Chairman, Committee on Taxation

of the United States and of New York State and were in conformity with the System of Accounts of the ICC which had precisely directed the method of accounting for such transactions.

After he had noted that the U.S. Supreme Court had required in a most unusual course the FCC to file in 1937 in regard to its Uniform System of Accounts an interpretation of what the Commission intended to do and that the FCC would not reopen accounts for the purpose of writing down amounts. Mr. Blackman emphasized that the ICC accounting instructions had been correctly followed by the A. T. & T. and New York Co. and that the ICC instructions covered such tranfers of property between affiliated companies. He noted that the FCC had excluded evidence offered by his company as to the applicability and intention of these instructions. The proposed report, he declared, had failed to demonstrate that the accounting was improper.

When Chairman Fly asked how the stipulation on the Uniform System of Accounts by the FCC to the Supreme Court had barred the Commission from going into the merits of accounting entries and if the ICC had passed upon the merits of these accounts, Mr. Blackman admitted that the ICC had not given sanction to these transactions but had laid down specific rules for their accounting enfries. Mr. Blackman did cite to the FCC that the merits of these transactions had been decided by a Federal statutory court (New York Tel. Co. v Prendergast). He added that the transactions had been attacked repeatedly before the ICC by New York Commission Chairman Maltbie, but the ICC had refused to change its accounting rules. Thus, he said, the ICC had indirectly upheld the transactions.

Mr. Blackman told Chairman Fly that he did not object to the FCC reviewing these transactions, but he was objecting to the proposed findings that they were improper. Because the telephone company had followed rigidly the ICC instruction on the value of purchased property, Mr. Blackman said that the FCC witnesses had tried to suggest that this instruction did not apply to transactions between affiliated companies. The instructions are so plain that they cannot be twisted or distorted, he added.

The New York Co. counsel emphasized to the Commission that the price which his company had paid to the American Co. was based upon an appraisal and was founded on fair value. The FCC, through its witnesses and the presiding commissioners, tried to hold that "we had no right to pay more than the book cost less depreciation," he continued.

FCC Rate Counsel Harold Cohen presented a short statement that from the viewpoint of proper accounting a subsidiary purchasing equipment from a parent company should not show in the plant accounts more than the net book cost as it was like an interdepartmental transaction. Commissioner Case interposed that this might lay aside the equities of the bond holders and the preferred stock holders. Mr. Cohen replied that the bond holders could raise objections to any such transactions.

TWX Minimum Rates

ON the ground that its TWX service is already being rendered at a loss, the West Coast Telephone Co., an Independent operating in Washington, Oregon and California urged the FCC through its counsel, Robert E. May, in a recent oral argument (Sept. 22) to continue its present tariff provisions of a $30 minimum monthly guarantee and a one year initial contract period for that service. The FCC in a Proposed Report had recommended the cancellation of these two provisions on the ground that the West Coast company had not offered proof of the costs of the TWX service to justify their continuance.

The brief argument presented by the West Coast counsel was featured by the pounding of questions, mainly by FCC Chairman James Lawrence Fly, together with some by FCC Commissioners Craven, Durr, Case and Wakefield. Mr. May stated that the telephone company

How Old Are You?

If we were asked this question today, we would answer that York-Hoover has just turned 52.

FIFTY-TWO consecutive years of manufacturing.

FIFTY-TWO years of business growth with its attending accumulation of know-how and experience.

FIFTY-TWO years of developing PLANS plus HANDS.

Throughout its business life, York-Hoover has always had a definite plan, a definite idea of the service it must render and the quality of product it must consistently produce.

Of equal importance is the development of hands, skilled manpower to do the job the York-Hoover way.

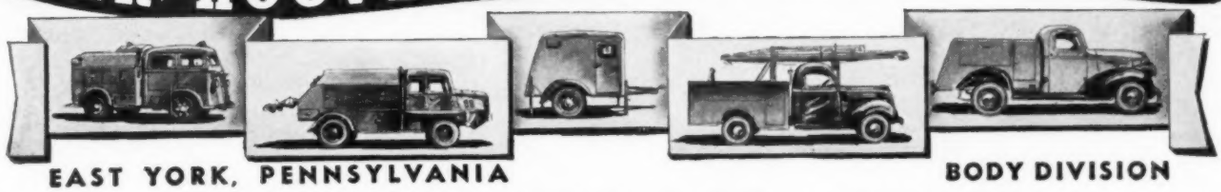
It is due to this latter long established policy that a large percentage of our employees have active records of from twenty to forty-three years' continuous service; that we have many father and son teams working daily and that the sons of many former employees have learned and are learning specialized phases of production.

Today York-Hoover's facilities are producing special equipment for Uncle Sam; exacting equipment for Signal Corps that is helping to WIN THE WAR.

When the PEACE IS WON, all the accumulated experience of our 5-? years will be at your disposal to help solve your problems.

For Excellence In Body Production

YORK-HOOVER BODY CORPORATION



EAST YORK, PENNSYLVANIA **BODY DIVISION**

W. CARTER DARROW
Chairman, Traffic Committee

Dear Mr. Smith:

The Traffic Committee of the Independent Telephone Association has planned to put on a program this year somewhat different than has been done heretofore. We are to have a talk by Captain K. F. McKittrick on "Practices for Handling Toll and Long Distance Calls on Administrative Telephone Systems for U. S. Army Military Establishments." It is possible I shall make a short verbal report on the activities of our Traffic Committee this year which have been important. However, most of the remaining time allotted to this will be spent in a series of staged demonstrations. These dramatic sketches are being prepared with the view of impressing upon the Independent Telephone Industry the advantages and the necessity for good technical operating and a well selected and trained Traffic personnel

Mrs. Mayme Workman and Mr. John F. Reding of Madison, Wisconsin are members of a Sub-Committee to arrange and present the Traffic program. If there is any further information I can give you, please let me know.

Yours very truly,
W. C. Darrow,
Chairman, Traffic Committee

did not want its present loss in the operation of TWX stations to be aggravated by the lowering of the $30 minimum guarantee and the shortening of the contract period. He urged that because of the future negotiations on TWX in connection with the Western Union Postal Telegraph merger the Commission might postpone its decision until that had been settled by the merger. Much of the questioning, especially by Chairman Fly, revolved about the cost figures submitted by West Coast Vice President A. N. Johns during the hearing on the tariffs and Chairman Fly interposed at the conclusion of the oral argument that the West Coast company did not seem to have any lengthy experience to establish depreciation and other cost factors on TWX operations.

At the outset of his argument, Mr. May pointed out that the West Coast companies had filed with their state commission TWX tariffs in 1934 containing the $30 monthly guarantee and the one year contract period provisions and cited that the West Coast company had adopted the policy of owning and installing TWX machines in its system because it did not believe the Pacific Telephone & Telegraph Co. should be permitted to invade its territory. In 1939 the FCC called to the attention of the West Coast company that it was a concurring carrier in the tariffs of the Pacific company which had filed "without the knowledge or consent of the West Coast Co." a tariff providing for a $10 minimum guarantee and a one month contract period for TWX. The West Coast then filed its tariff with a $30 minimum and the one year contract period provisions which were suspended Sept. 1, 1940. A hearing was staged in October, 1940 and the FCC issued its Proposed Report June 28, 1943.

Mr. May stated that the West Coast company had taken the position of filing its own "concurring carrier tariff because it insisted upon preventing the Pacific Company from installing and operating TWX within its own territory." Chairman Fly interposed that this meant the Commission was not faced with any competitive issue. Mr. May related that at the time of the Oct., 1940 hearing the West Coast only had three TWX machines in service but now has six additional TWX stations, including one of the FBI.

U.S. WAR EXPENDITURES
DAILY RATE
MILLIONS OF DOLLARS
MILLIONS OF DOLLARS
JULY 1940-AUGUST 1943
400
300
200
100
0
J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1940
1941
1942
1943

Most of the questioning revolved about the West Coast's estimates for annual depreciation of a TWX station of $102 compared with the FCC's allowance of $62.40. Chairman Fly delved into the depreciation charge estimates of the West Coast company and wanted to find out why the Independent estimated its annual revenue from a TWX station at $197.88 when it had a $30 monthly minimum and Mr. May cited that this was the result of the 70-30 percent division of tolls between the Pacific and the West Coast companies. Mr. May stated that there had been no complaints from the public with the FCC and the TWX subscribers had not complained to his companies.

Original Cost Yardstick

THE U. S. Supreme Court in its October term, which commences Oct. 4, is scheduled to decide a case of high importance in the field of utility rate regulation, that of the Federal Power Commission, the City of Akron and the Pennsylvania Public Utility Commission and the City of Cleveland versus the Hope Natural Gas Company. The vital issue underlying the main questions is whether the Federal Power Commission may employ the prudent investment or original cost method of rate-making as the sole criterion.

The decision upon this issue, and the questions of book depreciation methods as opposed to observed depreciation methods, and the findings of the Supreme Court on the question of whether items previously charged to operating expense can be charged to Capital Account and included in the rate base, will be of import to every rate-making body throughout the nation, regulated public utilities and all consumers of public utilities and all consumers of public utility services, it is felt.

It is understood that the case will come up for argument before the Court Oct. 19 or 20.

In the lower court determination of the case, the United States Circuit Court of Appeals for the Fourth Circuit had set aside an order of the Federal Power Commission reducing the rates of the Hope Natural Gas Co., and had also set aside the FPC's "findings as to lawfulness of past rates" charged by the company. The lower court's action in setting aside the Commission's "Order Reducing Rates" was based on several grounds, including the opinion that the Commission's use of a prudent investment rate base failed to reflect "present fair value," in view of the post-investment "decided change" in price levels shown by the record; that the Commis-

sion improperly determined accrued depreciation on the basis of "theoretical formulas" without considering the present physical condition of the company's property; and that the Commission should have based its annual allowance in operating expenses for depreciation and depletion upon the "present fair value" of the physical properties, instead of upon actual legitimate cost.

Probe "Bookie" Wires

AN immediate investigation of telegraph and telephone facilities leased for "non-essential" uses in the dissemination of race-track gambling information to "bookie" establishments was ordered by the FCC Sept. 21 as a means of conserving critical materials and skilled personnel for war purposes and to improve telegraph service. The inquiry was launched on the basis of testimony presented during the Telegraph Merger hearing and was in line with the objectives of the Board of War Communications to speed up telegraph service during the war.

In inaugurating this investigation, the FCC, it was felt, is removing to a certain degree from the merger proceedings the charges, made by the American Communications Association (CIO) that Western Union and Postal Telegraph were engaging to a considerable extent in the furnishing of facilities and personnel to disseminate racing information for gambling purposes. By launching this separate inquiry, it was believed that this issue of the ACA might, to a large extent, be removed from the Commission's merger decision except that the FCC might insist upon prohibiting such service by a consolidating company in the public interest.

The FCC's investigation stressed that it was not directed to the use of wire facilities for the transmission of racing information by press associations, newspapers and radio stations in the regular course of their business of informing the general public.

It was understood that there were probably no leased telephone circuits being used for the transmission of racing information to "bookie" establishments and it was ascertained that the Long Lines Department of the A. T. & T. had been used for this purpose for several years.

During the Merger hearing testimony was presented which asserted that Western Union has over 12,000 miles of circuits leased for the dissemination of racing information to "bookies" and that critical materials and skilled personnel are required to install, maintain and disconnect these "non-essential" facilities. The Commission ordered that this portion of the testimony, presented in the Merger hearings, should be made part of the record in this investigation.

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3. Provide Convenience
4. Increase Revenue

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New 60 Series

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They provide service for many people who, under present regulations, are unable to obtain private telephones. They furnish the ideal answer for telephone convenience in army camps, in war plant areas and in new housing developments. Installed in plants and offices, they give employees a handy means of making personal calls and at the same time keep the regular switchboard lines free for vital business traffic.

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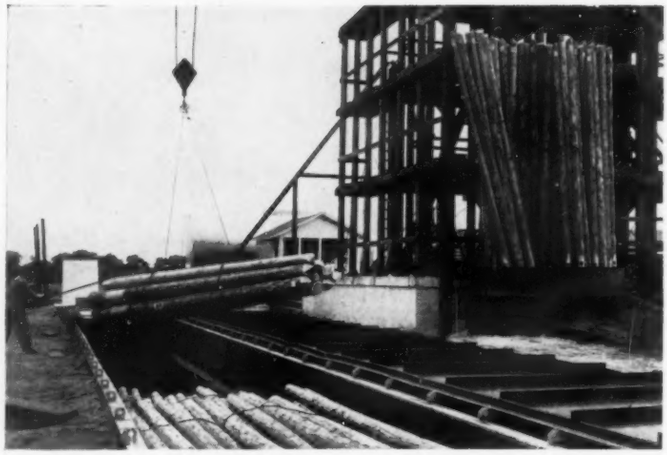

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(NORTHERN WHITE CEDAR)

Mean —

TREATED---FULL LENGTH

Many EXTRA years of trouble-free service are added to the already unexcelled long life of natural Northern White Cedar Poles. NAUGLE, for over 60 years a well known supplier to the telephone field, stakes its reputation on EVERY claim made for Penta poles.

Penta means a full length treated Northern White Cedar Pole. Treatment is from butt to top in highly chlorinated phenol solution.

Because the toxic potency of Pentachlorophenol is so great, this full length treatment positively makes the sapwood EVEN MORE RESISTANT to decay than the heartwood . . . something that pole producers have attempted to accomplish for years.

Penta Poles are in stock ready for immediate shipment. We will be pleased to quote you on your next pole order and give you further details.

NAUGLE'S Penta Poles Give many advantages

- 1. Brings heartwood durability to the surface making sapwood durability equal to the heartwood.
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- 5. Makes dry, odorless and CLEANER poles.

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TREATING PLANTS: Minneapolis, Minn. Sandpoint, Idaho Spokane, Wash.

Minnesota Commission Actions

On September 7, Minnesota Railroad and Warehouse Commission authorized the sale of certain service station lines of the Farmers Telephone Company, Olmstead Co., Minn., connected with the Rochester, Minn. exchange to the Northwestern Bell Telephone Company who operates and owns the exchange at Rochester. These lines owned by the Farmers company consisted of 40 installations, and all construction material on them.

On September 20 the Commission ordered as approved the sale of the Akeley (Minn.) Telephone Company from the ownership of F. E. Olson to Leo C. Fisher, an individual.

Discontinues

Discontinuance of telephone service in the rural territory of Clarksburg and Holland townships in Shelby county on Sept. 16 was approved by the Illinois commerce commission following application of the Holland Township Telephone Co. The service was inaugurated 40 years ago by J. E. Gallagher, who made up any deficits from his own funds. The sponsor died nearly a year ago and the service has been handicapped to such an extent that discontinuance was approved.

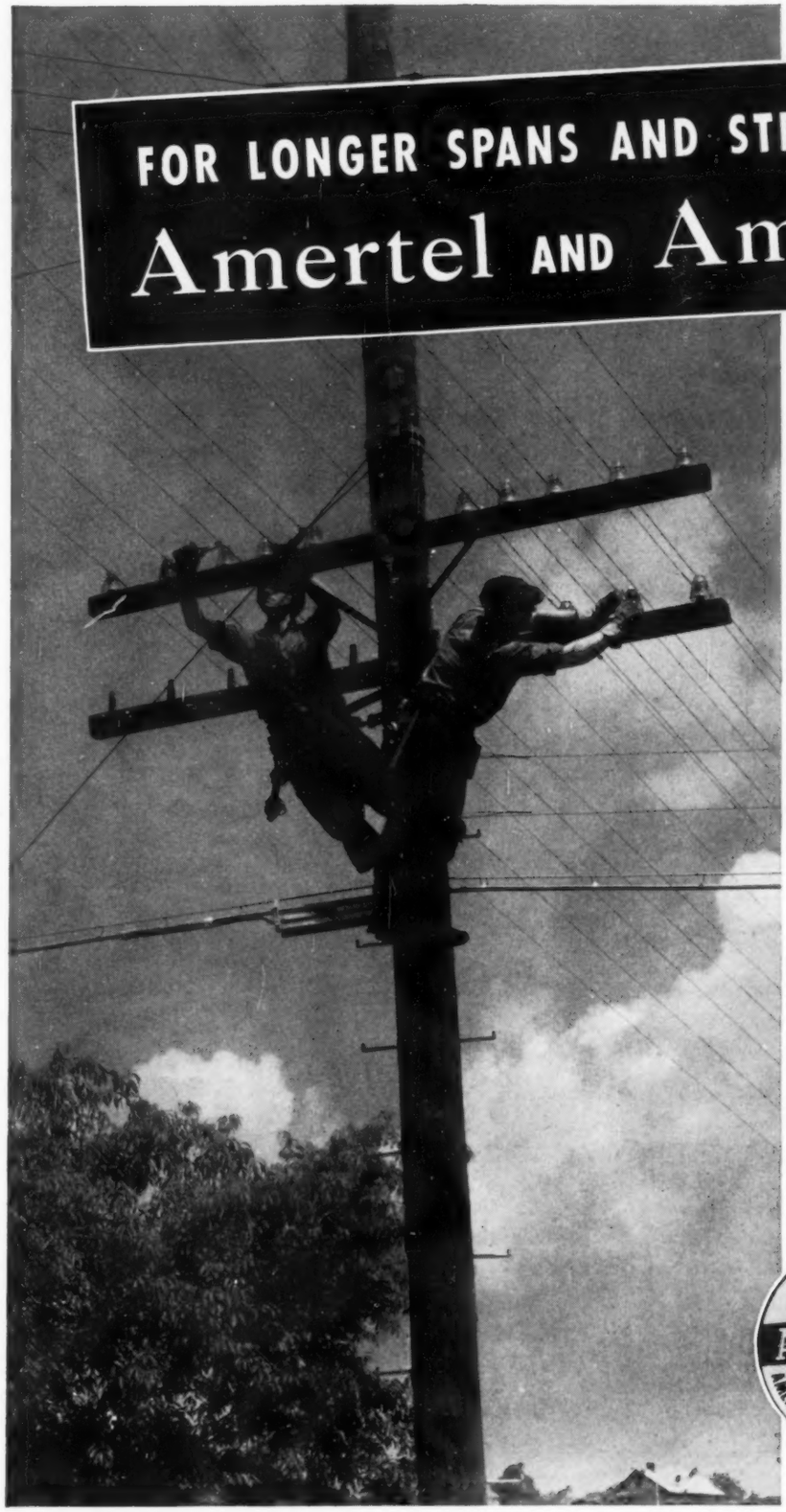
The commission at the same time denied the application of the Illinois Commercial Telephone Co. and the Mt. Pulaski Telephone and Electric Co., to discontinue free inter-exchange service between Warrensburg, Macon county and Latham, Logan county.

HELP! HELP!

Copies of our May TELEPHONE ENGINEER & Management containing Part I of our new Training Course are needed for new subscribers wanting to enroll in the course. We printed several hundred extra but the supply is almost exhausted.

If you have a copy available we will extend your present subscription four months for each copy you send in with Part I of the Training Course included.

This new short Training Course has proven unusually popular as those enrolling have their questions answered free and a diploma certificate issued them on their successful completing the course. Complete description was carried in the June 1 issue of Fortnightly TELEPHONE ENGINEER.



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Amertel AND Amerstrand

AMERTEL-85 and AMERTEL-135 have brought on many new economies. The longer spans made possible by their extra strength help you reduce construction time and costs. Fewer poles are required, which means less hauling, less digging, less connecting—with an appreciable reduction in valuable man-hours. This also means an important saving in materials.

These wires will withstand the strain of ice and wind loads, thus they help to effect savings in maintenance costs. With continuity of service so vital—and with maintenance crews cut to the minimum—this extra protection against failures is highly important.

All Amertel Wires, including "EBB," "BB," and "Steel" grades, as well as Amerstrand Steel Strand are produced to a high standard of "Controlled Quality." Every production step—from ore to finished product—is under strict control and experienced supervision. The zinc coating is applied by a special galvanizing process which offers maximum protection against corrosion.

THESE TAGS are placed for your protection on every coil of Amertel Telephone and Telegraph Wire and Amerstrand Steel Strand. They are your assurance of highest quality.

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UNITED STATES STEEL

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We Suggest

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• **DRIERITE DESICCANT** absorbs water by Chemical Action and its performance is not limited to absorbing moisture "by physical means alone."

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• **DRIERITE DESICCANT** absorbs and holds moisture notwithstanding temperature rise; physical absorbents release absorbed moisture if the temperature of the splice is raised.

• **DRIERITE DESICCANT** is the most efficient drying agent available for cable splicing; and is furnished to all users under our established price schedule.

Standard Packages

1/8 Pint Can (50 grams) 48 per Carton
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SUB-CYCLE TESTED BY TIME

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Sub-Cycle built for heavy duty and designed in accordance with sound engineering principles has proven its efficiency under the most severe operating conditions. Some of the many reasons why it delivers so many years of trouble-free service are: no moving parts — nothing to adjust—no routine maintenance—economical and quiet in operation—produces a powerful ringing current and cannot interfere with radio reception.

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Stocks of Crossarms, 2" to 4 1/2" Single and 2" to 4" Multiple duct Split Conduit, Cover Plank and Anchor Plank conforming to A. T. & T. Specifications carried at all times.

READY FOR TOMORROW *Today*

THE TELEPHONE BOOTH OF THE *Future*

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Utility Order U-2 Amended

That you might have the complete amended Order U-2 made effective September 2, we are reproducing the order herewith in full. In its Bulletin of September 22, the United States Independent Telephone Association issued some comments pertinent to the revised Order. These are:

1. The revised order now subjects to the drop wire span limitation provisions, **all pole lines** including those on private property and those designed to serve in the ultimate only a single subscriber. Some have interpreted the drop wire span provisions in the old order as applying only to main aerial exchange cable or wire routes and not to pole lines on private property or those serving individual subscribers.

2. A question is occasionally raised whether or not the drop wire span limitations must take into account existing spans of either working or dead drop or aerial wire. It is the general understanding that the span limitation provisions refer only to spans which are **added** to existing plant, hence existing dead drop wire in place may be repaired and used in conjunction with new spans without being counted under the span limitation provision. Likewise, extensions from an existing party line drop may be made without consideration of the number of existing spans.

3. The drop wire limiting provisions in the revised order do not apply to "block wire," which is wire installed along fences or building walls.

4. The WPB has asked that attention be called to the descriptive statements prefacing the list of Schedule A services. In the revised order this statement has been amplified in order to stress the point that in order to qualify for Schedule A treatment the service must be required for the proper discharge of responsibilities for direct defense, or public health, welfare or security. In other words, the fact that an individual may be employed in an essential activity, as for example, railroad work, is not sufficient to qualify him for Schedule A treatment, and it is up to the telephone company to determine essentiality."

Effective Sept. 2, 1943.

WAR PRODUCTION BOARD

Part 4501—Communications

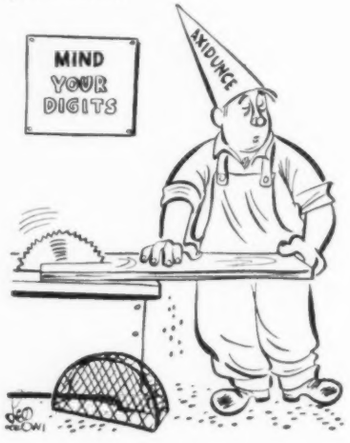
(Utilities Order U-2 as Amended Sept. 2, 1943)

GENERAL CONSERVATION ORDER FOR TELEPHONE INDUSTRY

(a) Definitions.
(b) General.
(c) Restrictions on replacements.
(d) Regrading, disconnections and substitutions.
(e) Limitations of additions.
(f) Engineering and planning.
(g) Non-applicability to certain replacements and additions.
(h) Reports.
(i) Records.
(j) Exemption of armed services.
(k) Appeals.
(l) Violations.
(m) Communications.

§ 4501.1 Utilities Order U-2—(a) Definitions. For the purpose of this order:

(1) "Operator" means any individual, partnership, association, business trust, corporation, receiver, or any form of enterprise whatsoever, whether incorporated or not, the United States, the District of Columbia, any state or territory of the United States, any political, corporate, administrative or other division or agency thereof, to the extent engaged in rendering telephone communication service, within, to, or from the United States, its territories or possessions.



(2) "Exchange line plant" means all that portion of an operator's local wire or cable distribution system which extends from the central office main frame, exclusive of poles, crossarms, insulators, and non-metallic conduit, and associated hardware and guys, and exclusive of drop and block wires.

(3) Without regard to whether or not the expenditures therefor are for any reason required to be recorded in the operator's accounting records in accounts other than maintenance and repair:

(i) "Maintenance" means the minimum upkeep necessary to continue a facility in sound working condition.

(ii) "Repair" means the restoration of a facility to sound working condition when the same has been rendered unsafe or unfit for service by wear and tear, damage, failure of parts or the like.

(iii) Neither maintenance nor repair shall include the improvement of any plant, facility or equipment, by replacing material which is still usable with material of a better kind, quality or design.

(4) "Drop and block wires" means the portion of a customer's circuit (whether aerial or underground) extending from the inside wire (usually at the station protector or connecting block), or from the station equipment when no inside wire is involved, to the point of connection with the general overhead or underground system. This includes such circuit, carried by means of wire or small cables, extending to the cable terminal in cases where connection is made with a general cable system, or to the point of connection with the aerial wire plant in cases where connection is made with a general wire system, and also includes brackets, bridle rings, insulators, knobs, span clamps, screws, sleeves, strand, tubes, and other material used in the installation of drop and block wires; and the pipes or other protective covering for underground service connections.

(5) "Station installations" means the wires (or small cables) from the station apparatus to the point near the entrance to the building where the drop or block wire or cable terminates or to the junction boxes where the house cable or other cable terminates; the wires (or small cable) used to connect station apparatus in the same building, such as main stations with extension stations, and stations of intercommunicating systems; the wires (or small cables) used to connect private branch exchange switchboards or their distributing frames with terminal stations located in the same building, and the clamps, cleats, connecting blocks, ground wire,

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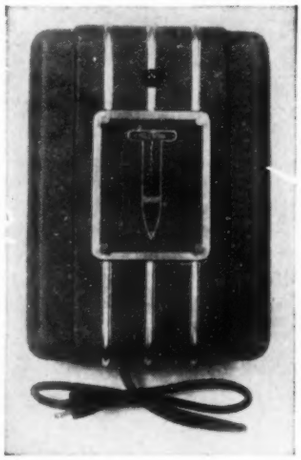


Directly converts Commercial Alternating Current to Telephone Ringing Current—Current Consumption Negligible—Positively NO radio interference.

Use TELERING and provide the MOST reliable service at the LEAST cost.

FIGHTIN' MAD!

THAT'S WHAT WE ARE—and we've gotta keep that way until Victory . . . While we at Telkor are taxing the limit of our facilities to supply our government with a few vital necessities in the war effort that it is our good fortune to be able to manufacture, we are looking forward to the day when we can devote all of our time and energies to serving the Independent telephone industry.

May we extend our best wishes to every member of the United States Independent Telephone Association. We hope your coming convention will be the best you have ever had.

TELKOR, INC.

ELYRIA, OHIO

ground rods, nails, station protectors, screws, and other material used in the installation of station apparatus and inside wires. The cables referred to above are the small cables used in station installations instead of wires, such as those run from wall outlets or floor terminals to the station apparatus. Inside wires (or small cables) installed specifically to serve as trunk, battery, or generator circuits from a private branch exchange to the point of connection with the permanent house or outside cables or wires shall be considered as a part of the station installations. The term "station installations" does not include the telephone instrument or other "station apparatus."

(6) "Person" means any individual, partnership, association, business trust, corporation, governmental corporation or agency, or any organized group of persons whether incorporated or not.

(b) **General.** (1) All operators shall conserve scarce and critical materials by the employment of all practical methods such as: the use of such types of equipment and facilities as will reduce the use of such materials to a practical minimum and meet necessary service requirements, the substitution of less scarce materials, when such substitution can be made without serious loss of efficiency, the reuse of existing telephone equipment and facilities.

In order to make maximum use of existing facilities and at the same time to avoid as far as practicable the use of scarce and critical materials to provide additional exchange central office call carrying capacity and exchange interoffice trunks in the event of any future substantial increase in local telephone usage, all operators shall limit the number of main telephone stations (i.e., the total number of stations and P.B.X. trunks exclusive of extension stations and P. B. X. stations) connected to any central office to 105 per cent of the number of main stations that the central office was designed to serve under prewar engineering and operating practices **or such other percentage as may be specifically approved by the War Production Board** (except this limitation need not be applied in the case of a single-office exchange where the central office is designed to serve less than 1000 main telephone stations): **Provided, however**, That where the number of main stations now connected to a central office already exceed the 105 per cent limit specified above, the number already connected need not be reduced so long as the service is satisfactory.

(2) (i) All operators shall discontinue the further installation or reconnection of residence extensions, residence private branch exchange telephones or the employment of additional main lines or stations on party lines in substitution therefor and the further installation of jacks and plugs in connection with residence service. Jacks already in place may be reconnected provided that the customer shall have not more than one telephone and one bell in his residence.

KID SALVAGE

(ii) In cases of practicing physicians and surgeons certain residence extension telephone service may be provided. The operator may install or reconnect, one extension telephone, or as an alternative install two jacks for use with a portable telephone, where it is determined that the relocation of the main line telephone will not substantially meet his requirements for service and that the installation of facilities to provide extension service is essential to the subscriber in the proper discharge of his duties and responsibilities for public health, welfare or security. In addition the operator may establish a connection with an answering bureau, if no additional facilities are required in the answering bureau.

(iii) Temporary installation of one residence extension may be made when essential in cases of serious illness.

(iv) The installation and reconnection in residence quarters of telephones connected to private branch exchanges serving hotels, apartment houses, etc., may be made to the extent that no more than one telephone shall be provided in any single residence quarters.

(3) All operators shall discontinue the placing of open copper wire in exchange line plant.

(4) All operators shall discontinue the further installation of dial private branch exchange systems and dial private intercommunicating systems. This does not, however, prohibit: the installation by an operator of such systems of less than 100 lines where such equipment is already in the stocks of operators; the installation of additions to such existing systems; or, moves of such systems for the same subscriber within the same exchange area, or to a contiguous exchange area of the same operator, where effected in accordance with the limitations of paragraph (e) of this order.

(5) Service, involving exchange, central office equipment and/or exchange line plant, installed or reconnected on and after the 15th day of April, 1943 shall be on an interim basis only, that is, subject to regrading and disconnection as provided in paragraph (d). Exchange central office equipment and/or exchange line plant **or telephone sets** made available through normal disconnections shall be used to take care of current applications for service of the kind included in paragraph (e) (1) (i) before such facilities are used currently to complete applications for service in other categories. Idle facilities may be reserved where necessary to meet promptly the known or fairly anticipated service requirements of the kind included in paragraphs (e) (1) (i) and (e) (1) (ii).

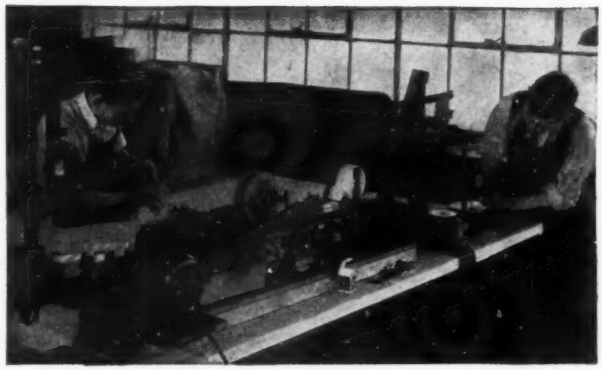
(6) (Revoked Sept. 2, 1943).

(7) Except where necessary to meet the needs of Schedule A business service and for essential public pay stations, all operators shall limit the further installation of drop and block wires along any pole line in exchanges serving more than 1,000 main telephone stations to one pole-to-pole span from the point of connection with the existing plant (except where this span is less than 75 feet, in which case the length along the pole line shall be limited to two spans) and in exchanges serving less than 1,000 main stations to two pole-to-pole spans from the point of connection with the existing plant. However, the drop wire may be extended beyond the limit specified to a messenger strand attachment in the next adjacent span, and to a single pole outside the line when such attachment is necessary to provide clearance over a street or to clear a tree or other obstacle.

(c) Restrictions on replacements. (1) All operators shall limit the replacement of equipment and facilities (except poles, crossarms, insulators and nonmetallic conduit, associated hardware and guys and station installations) to the essential requirements of maintenance, repair or protection of existing service, except:

(i) Where necessary to provide a permanent installation in lieu of one temporarily made to meet an exigency;

(ii) A substitution of facilities necessitated either by decreased service demands or by the provisions of para-



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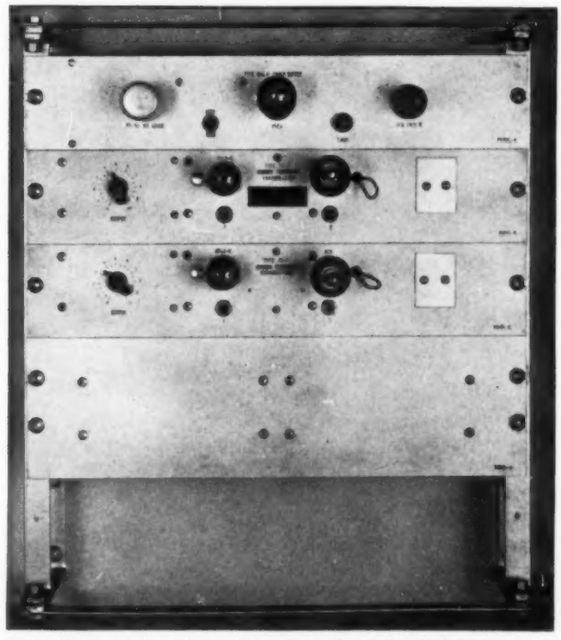


Pictured above is a two channel carrier telegraph transmitter suitable also for telemetering.

COMMUNICATION EQUIPMENT & ENGINEERING COMPANY

504 North Parkside Avenue **Chicago 44, Illinois**

graphs (d).

(iii) A substitution of telephone sets necessary to effect a change in the "class" or "grade" of service, provided such change is not otherwise prohibited by this order. The "classes" of service involved are business, residence, semi-public, residence coin; the "grades" of services involved are individual, two-party, four-party multi-party.

(d) Regrading, disconnections and substitutions. (1) To the extent necessary to meet minimum needs for service of the kind included in paragraphs (e) (1) (i) and (e) (1) (ii), all operators shall make available additional exchange central office equipment and/or exchange line plant in the following order in so far as practicable:

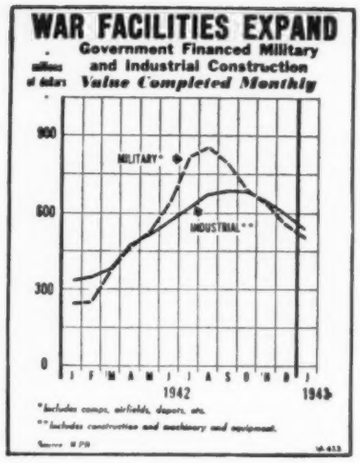
(i) By regrading existing service whenever current installations of central office equipment will permit, except where regraded service will not meet the minimum service needs of residence subscribers of the kind included in paragraph (e) (1) (i) or of business subscribers. In so far as practicable such service shall be regraded in the reverse order of the dates of connection at the existing locations (i.e., the most recently connected service shall be regraded first), except that service furnished on an interim basis shall be regraded before other service.

(ii) By disconnection of service furnished on an interim basis other than that of the kind included in paragraphs (e) (1) (i) and (e) (1) (ii). In so far as practicable disconnection of such service shall be in the reverse order of the dates of connection at the existing locations, except that residence service shall be disconnected before business service.

(2) (Revoked Sept. 2, 1943.)

(e) Limitations on additions. (1) All operators shall limit additions of exchange central office equipment and exchange line plant to such as are essential to the maintenance or protection of existing service, except that, when no additional facilities may be recovered or made available by the methods described in paragraph (d) above, additions may be made to the extent necessary:

(i) To meet the known or fairly anticipated demands for service essential to persons engaged in direct defense or charged with responsibility for public health, welfare or security including, but not limited to, those in the service categories shown in Schedule A attached; where their employment in direct defense or their responsibilities for public health, welfare, or security require such service for the proper discharge of such duties: **Provided,** That such additions shall not be made for residence service except in accordance with paragraphs (e) (1) (iii) and (e) (1) (iv).



(ii) To provide for the installation of public pay stations to meet essential public demands.

(iii) To provide service requested by producers of substantial quantities of food where such service is essential to such producers' operations: **Provided, however,** That in no single case shall there be used more than 100 pounds of steel or iron wire in the case of grounded circuits nor more than 200 pounds in the case of metallic circuits for each such subscriber connected.

(iv) To provide cable terminals required in existing exchange line plant to make available for use facilities not otherwise usable for known demands.

(f) **Engineering and planning.** Except in respect to poles, crossarms, insulators and non-metallic conduit, and associated hardware and guys, all operators shall:

(1) Engineer all replacements and additions to exchange plant so as to limit the margins for expected growth of service requirements of the kind described in paragraphs (e) (1) (i), (e) (1) (ii), to a period not in excess of one-half the period for which provision would be normally made, but in no event to exceed a period of three years.

(2) Engineer all replacements or additions to toll plant so as to limit the margins for expected growth of service requirements to a period not in excess of one-half the period for which provision would be normally made, but in no event to exceed a period of three years; provided, however, that this requirement shall not require the limitation of the margins of such growth to a period less than one year, and provided, further, that conductors in cables designed or suitable for use with carrier current systems may be provided (but not equipped) in such numbers that, when fully utilized by present or immediately contemplated carrier current system technique, they will provide for margins for expected growth of one-half the normal provision for such growth, even though such provision exceeds a three-year period.

(g) Non-applicability to certain replacements and addition. The terms of paragraphs (b), (c), (e) and (f) shall not prohibit:

(1) Wire communications projects approved by the War Production Board on Forms WPB-617 (PD-200), WPB-2774 (UF-30), WPB-1696), (PD-685), or other appropriate form.

(2) The completion of projects in accordance with the provisions of General Conservation Order L-50 as amended September 7, 1942, the physical installation of which projects was started on or before the 25th day of March, 1943.

(h) **Reports.** All operators affected by this order shall execute and file with the Office of War Utilities such reports as the Director, Office of War Utilities, shall from time to time require; **subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.**

(i) **Records.** Each operator affected by this order shall keep and preserve for not less than two years accurate and complete records concerning his use of steel or iron wire and number of main telephone stations connected under the provisions of paragraph (e) (1) (iii) subject to the inspection of the duly authorized representatives of the War Production Board.

(j) **Exemption of armed services.** The restrictions of paragraphs (b) (3), (b) (4) and (c) shall not apply to facilities for the official use of the armed services of the United States.

(k) **Appeals.** Any appeal from the provisions of this order shall be made by filing WPB-2117 Form (PD-761), giving all information required by said form.

(l) **Violations.** Any person who wilfully violates any provision of the order or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, material under priority control, and may be deprived of priorities assistance.

(m) **Communications.** All reports required to be filed hereunder, and all communications concerning this order, shall, unless otherwise directed, be addressed to: Communications Divis-

ion,, Office of War Utilities, War Production Board, Washington 25, D. C., Ref.: U-2.

Issued this 2nd day of September, 1943.

J. A. KRUG,
Director, Office of War Utilities.

SCHEDULE A

Types of persons to be accorded preference in obtaining service if the use of a telephone is necessary to perform their duties in direct defense of public health, welfare or security.

NOTE: Caption amended Sept. 2, 1943.

1. Official Army, Navy, Marine Corps, Coast Guard, civilian defense services.

2. Official Federal, state, county and municipal government agencies.

3. Official agencies of foreign governments.

4. (a) Public or private organizations directly serving the public safety, health or welfare, such as: hospitals, clinics, sanitoria; physicians, surgeons, dentists, nurses, nurses' registries, veterinarians, ambulance services, manufacturers or distributors (wholesale or retail) of drugs, surgical, medical, hospital or dental supplies or equipment; mortuaries, burial service organizations, the American Red Cross and similar agencies.

(b) Common carriers, pipe line companies, all types of public utilities.

(c) Press associations, newspapers, radio broadcasting stations.

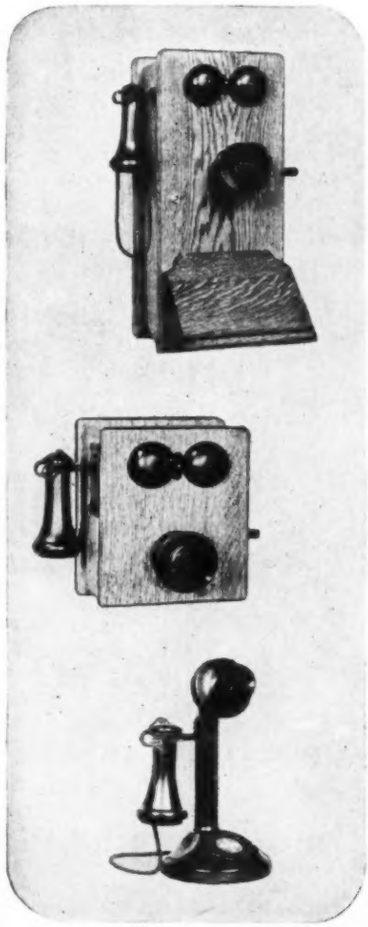
(d) Philanthropic and eleemosynary organizations recognized as such by the Bureau of Internal Revenue, including their fund-raising offices; United Service Organizations and other similar organizations; religious establishments and their officiating clergy; Christian Science practitioners; public and private schools; and food processing, food distribution (wholesale and retail) and food storage organizations.

5. Business concerns furnishing material, equipment or facilities under prime or sub-contracts to the armed services of the United States (and their suppliers); persons rendering special services in connection with construction of defense projects as shall be authorized pursuant to Preference Rating Order P-19-h,or other appropriate form, such as contractors, engineers, architects, etc.; and labor unions having bona fide collective bargaining agreements with business concerns identified in this Category 5.

6. The business or management offices of new housing developments.

Salvage

Will Help YOU Win YOUR War, Too!



Salvaging all possible material is an important factor in winning our battles at home — battles against shortages, wear, time, and lack of manpower.

To Independent telephone companies it has still further meaning. Thanks to Autelco Rebuilding service salvaging means you can renew and use that old equipment you had slated for the discard. It means, further, that you can keep your service standards at peacetime levels.

Here's why: Autelco Rebuilding is a unique method of making efficient and smart looking telephones and switchboards from old ones. It means ***much more*** than just repairing; it means rebuilding piece-by-piece—just as equipment is first assembled at the factory—from the ground up. With this treatment, Autelco Rebuilt apparatus ***performs*** like new despite the fact that it uses little or no critical material.

Get further details—find out how salvaging by the Autelco Rebuilt process can help you win your battles against equipment shortages and wartime maintenance burdens.

NOTE: Orders for Autelco Rebuilding Service may qualify for priority rating under WPB Maintenance and Repair Orders. Please include priority certification with all orders.

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Better service for those in service ★

The advertisement on the opposite page is appearing in national magazines during October and is part of a concerted effort to help keep Long Distance lines free during evening hours for service men and women.

This appeal to the public serves the entire telephone industry—both in easing congestion and creating good-will among the services.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

He has a promotion to report. Or a week-end leave coming up. Or it's his mother's birthday.

Evening is about the only time he's free to call and it's important to him.

Will you do your best to avoid Long Distance calls after 7 at night, for the sake of millions of Joes — and Josephines? They'll appreciate it.

BELL TELEPHONE SYSTEM

Maintaining Full Wartime Service

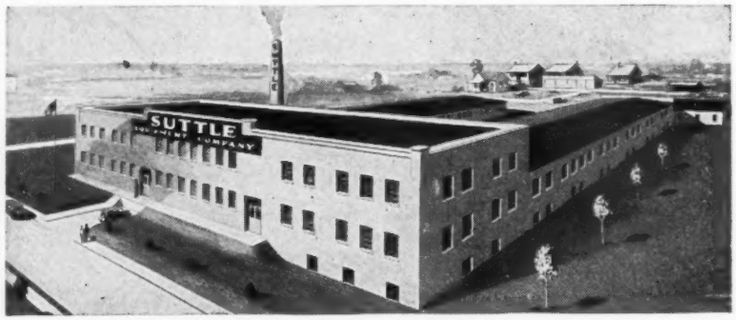
For the past two years Suttle has been taking on more and more jobs of making various items used by the Signal Corp for use on army and naval airplanes. The demands for Suttle Remanufacturing services during this same period has increased tremendously. With the war orders and the telephone orders all coming under the AA1 priority regulations a full war time service is being maintained.

See Us at Sherman Hotel Oct. 14-15

SUTTLE
EQUIPMENT COMPANY

Write Us at Lawrenceville, Illinois

This modern factory building is owned and occupied exclusively by Suttle Equipment Company in serving telephone men and other war needs. It contains forty thousand square feet of floor space.



In this building work some 150 full-time employees specially trained in the practices of getting maximum usefulness out of salvaged telephone parts. This background is your best protection.

Trainload of Poles to be Inspected and Placed in Pile for Seasoning at Our Minneapolis, Minnesota Plant.

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Western Red and Northern White Cedar, plain or butt treated for *quick* or *future* shipment.

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THE MAC GILLIS & GIBBS COMPANY
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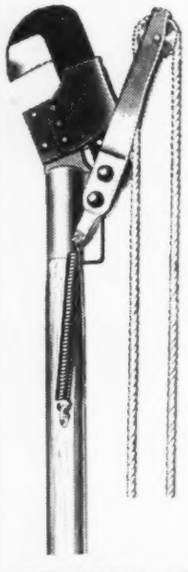
THE TOOL THAT DOES A BETTER JOB

LET NEWMAN SOLVE YOUR LINE CLEARANCE PROBLEMS



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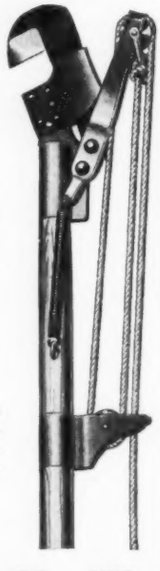

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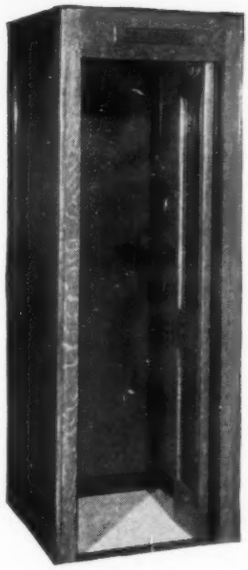

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We are proud to tell our many telephone friends that Churchill products are winning the same high esteem in actual service at the front in the various theatres of war that we believe the Churchill booth has earned in peacetime in the operating telephone field.

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To our many telephone friends may we say: For the present, we are unable to make shipment of all types of telephone booths. We regret it . . . but we know you will understand.

Also, we are sorry . . . No Free Telephone Service this year for the convention. There's a war on and Churchill is in there "pitching".

After the war Churchill will again be ready and happy to serve you.

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CHURCHILL CABINET CO.

CHICAGO

Electrical Fundamentals For the Telephone Man

(Continued from page 44)

DC Motor Characteristics

THE shunt motor is the most popular type of motor. It has good constant speed characteristics and its speed can be easily controlled over a wide range by varying the field current. Series motors are used where high starting torque is required or where great torque under heavy loads is desirable. As an example of the respective uses of these two types of DC motors, we would find that for operating a fan the shunt motor would be the most useful type inasmuch as in a fan constant speed would be the primary consideration, but in an electric drill the series motor would be better addapted because of its ability to provide adequate torque under varying load conditions. The direction of rotation of motors can be reversed by reversing the leads to either the armature or the field windings. The compound motor has good constant speed characteristics with fair torque.

D. C. Generators

THE electrical generator is a device for converting mechanical energy into electrical energy. It consists essentially of an electromagnetic field through which conductors arranged in the form of a loop rotate. When a conductor is moved through a magnetic field so that the direction of its movement is at right angles to the magnetic lines of force from the field, a voltage is generated across the opposite ends of the conductor so moved. If the two ends of the conductor are connected to an external load, then current may be drawn from the conductor as long as it is motion. (See Fig. 91).

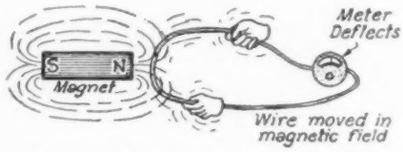

Fig. 91.—Electromagnetic generation of electricity

Need for Commutator

THE direction of current generated in a loop of wire revolving in a magnetic field is constantly reversing, due to the fact that the conductors of the loop pass first by a south magnetic pole and then by a north magnetic pole. Therefore, for a two pole generator as shown in Figure 92, the current would reversed in the two conductors once for each revolution. If we therefore desire to have direct current available from our generator we must provide it with a commutator or rotary reversing switch as shown in Figure 93.

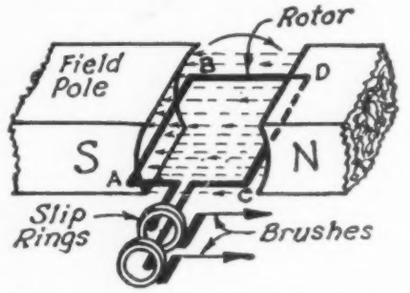

Fig. 92.—Elementary single coil generator equipped with slip rings

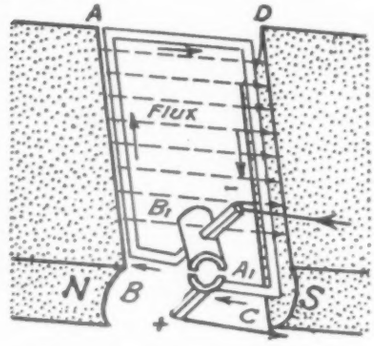

Fig. 93-A.—Elementary single coil generator equipped with a commutator

A commutator consists in its most elementary form of two semi circular segements insulated from each other and connected to the two ends of the coil as shown in Figure 93. These segments are rigidly attached to the revolving armature. Two carbon brushes are so positioned that they make contact with the segments and at the instant the direction of the current reverses in the two conductors, the rotary switch reverses the connection to the external circuit in such a manner that the current always flows in the same direction in the external circuit.

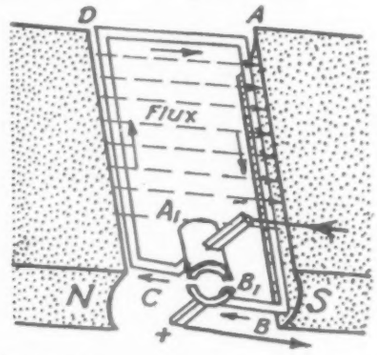

Fig. 93-B.—Same elementary single coil generator shown in Fig. 93-A but one half revolution later

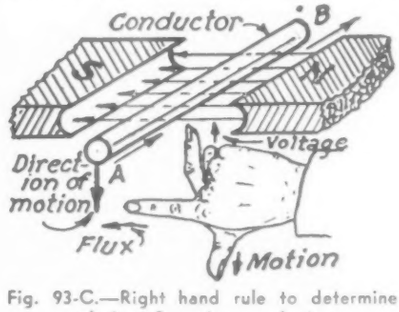

Fig. 93-C.—Right hand rule to determine polarity of moving conductors

EXAMINATION No. 6

D. C. Motors and Generators

1—What is the essential difference between a D. C. motor and a D. C. generator?

2—Explain the theory of operation of the simple D. C. motor.

3—What are the component parts of a shunt motor?

4—Why is a commutator necessary on a D. C. motor?

5—What is the counter voltage generated by a D. C. motor? What effect does this have on the current which the motor draws?

6—Why is a starting box necessary on the larger D. C. motors?

7—Draw three schematic diagrams showing the three different types of D. C. motors.

8—Explain the theory of the simple D. C. generator.

9—How many different types of D. C. generators do we have?

10—Why is a commutator necessary on a D. C. generator?

A. C. and D. C. from Same Armature

THEREFORE, if we want alternating current from a generator we have our external circuit connected to the armature by means of **collector rings** as shown in Figure 92, or if we desire direct current we must use the commutator referred to above. By supplying an armature with both collector rings and a commutator we would obtain both direct current and alternating current from the same generator.

Commercial Generators

IN order to develop voltages of useful magnitude and in order to make generators compact and efficient, our armature must have many coils rather than the single coil described in the elementary generator. These coils are wound on a heavy laminated iron core and the ends of the respective coils are connected to a commutator having a number of segments rather than just two. **The voltages generated in the various coils all add in services** so that the voltage impressed across the brushes that bear on the revolving commutator will be much higher than the voltage of a single coil. Each coil has a number of turns of wire rather than a single turn.

Three Types of DC Generators

LIKE DC motors, DC generators are grouped in three types, depending on the method of field connection; namely, the shunt, the series, and the compound. The shunt generator has its field in shunt with the armature winding, the series generator has its field in series with the armature, and the compound generator has both a shunt and series field.

The shunt generator delivers fairly constant voltage regardless of load, the voltage of a series generator varies with the load inasmuch as the field current is in series with the load. A compound generator is so designed as to provide a very constant voltage regardless of load.

(THE END)

(This Lesson completes the present Wire Chief's Course on Electrical Fundamentals. Certificates will be sent to all successfully completing the six lessons.)

Join Army, See Phone

The first time Orville Griggs, Oklahoma farm boy, ever used a telephone was in an army recruiting office when he was enlisting as an air force mechanic. Saying he "just never lived around a telephone," he added that "it seems like a good thing if you can understand it."

We've all been asked to economize . . . to conserve every way we can . . . for the "duration." No set of rules, no amount of knowledge or study, will answer the question of how long that might be.

But one thing we do know—even if the period is longer than we all wish—the telephone men who've used Amertel wire for their lines—or Amerstrand Steel Strand for their messengers and guys—are assured of maximum safety and service.

These men know Amertel's great strength practically eliminates repairs and interrupted service. They know these things in turn mean conservation of steel . . . of machinery . . . of manpower. And they know, too, the quality built into every inch of every type of Amertel wire means lower maintenance and fewer unnecessary breakdowns, regardless of other circumstances.

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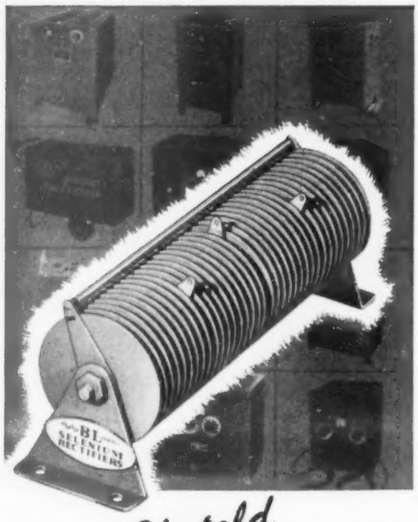

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THE BENWOOD LINZE CO.

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Designers and manufacturers of copper Sulphide and Selenium Rectifiers, Battery Chargers, and D.C. Power Supplies for practically every requirement.

Personalities

S. S. Mattingly, president and manager of the Tollesboro, (Ohio) Mutual Telephone Company, has received a corporation charter for that company and has announced additional stations will be served in the Burtonville area. The company also serves Trinity, Springdale and Poplar Flat, Ohio.

•

Arthur W. Page, vice president of the American Telephone and Telegraph Company, has been named chairman of the committee on public information of the National War Fund.

•

T. Barton Baird, Tennessee manager for the Southern Bell Telephone & Telegraph Co., has been promoted to general commercial manager of the company, with headquarters in Atlanta. Mr. Baird, who has had more than 40 years experience with the Bell System will be succeeded as Tennessee manager by **W. E. Duncan,** Carolina manager; **E. H. Wasson**, general commercial supervisor in Atlanta, becomes Carolina manager and **Clyde J. Yates,** general commercial engineer in Atlanta, succeeds **Mr. Wasson.**

John F. McKernan, chief deputy regional director of the WPB in New York City resigned Sept. 1 to return to his executive post with the Western Electric Co. He had served with the WPB as a dollar-a-year man since Sept. 1 1942, and had been the chief deputy director in New York since last February.

•

J. S. Reed, of the Lincoln (Nebr.) Tel. & Tel. Company is busy writing an article for an early issue of TELEPHONE ENGINEER on tree trimming. It will be fully ilustrated and we expect many companies will want to file the entire article. Watch for it!

•

Seaman 1st. Class Jackie Bell and **Pvt. Loretta Janotti** are the girls providing the two stars in the service flag of the commercial department of the Norwalk, Ohio, exchange of the Northern Ohio Telephone Company.

Chief Engineer H. W. Wheeler of the Lincoln Tel. & Tel. Company is getting quite a reputation as a writer. His letters to the engineering department calling their attention to the Third War Loan resulted in that department hiking their bond purchases by 15.6%. His letter was commended by vice president and general manager **John H. Agee** in the September issue of the Lincoln Telephone News.

•

Warren Eastwood, advertising manager of the Stromberg-Carlson Company and known as **"Mr. Chips"** to his associates, has been made head of the new Salvage Department of that company. His title of advertising manager could mislead you as he is a telephone engineer and has prepared specifications for hundreds of switchboard parts.

•

Colonel Ira H. Treest was recently designated chief of the Communications Engineering Branch of the Army Communications Service of the Office of the Chief Signal Officer. The creation of this Branch was a step instituted by **Brigadier General Frank E. Stoner,** ACS Chief, to streamline his organization.

•

After 28 years service as the American Telephone & Telegraph Company's first and only Medical Director, **Dr. C. H. Watson** will retire on Oct. 1, having reached the retirement age of 65 this month.

•

Concluding a career of more than half a century in the telephone business, **Arthur A. Lowman** retired Sept. 2 as Chairman of the Board of the Northwestern Bell Telephone Co., but continues his state, civic and educational interests. **Mr. Lowman,** who held the position of President of the Northwestern Bell from 1935 until 1942, when he was appointed chairman of the board, will continue to serve community and state interests as vice

FOR DRYING CABLE SPLICES

USE DAVISON'S
PROTEK-SORB
DESICCANT

PROTEK-SORB
Desiccant
For Drying Cable Splices
Keep jar sealed until ready for use.
Keep cover tight between applications or discard remainder.
Discard partially used jar at end of the day.
See Handbook for amount of DESICCANT to be used.
The Davison Chemical Corporation
Baltimore, Maryland

Protek-Sorb Desiccant has more than twice the capacity of other desiccants... moisture in the splice is absorbed almost instantly. Assures quick return to normal insulation resistance, permanently dry splices that reduce maintenance costs.

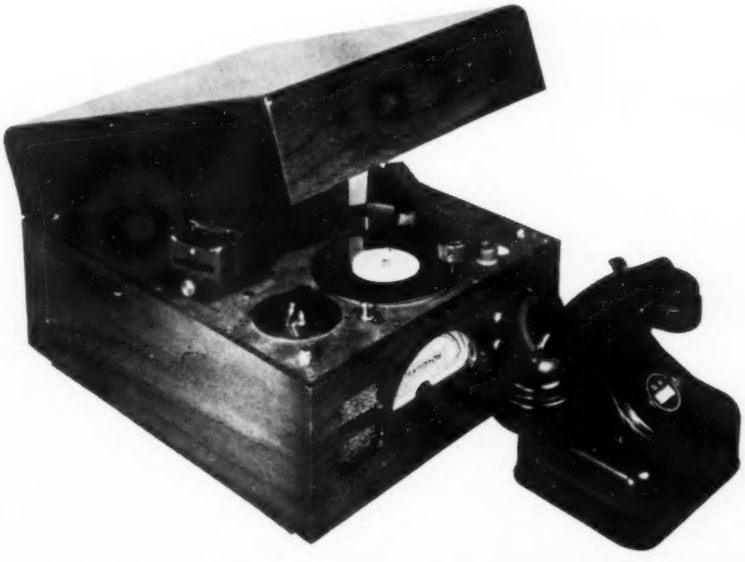
Chemically inert, non-reactive... does not give off fumes or odor... will not attack metals, insulation or wire coverings. Provides welcome relief from the dangers and guess work of the "boiling-out" method and the inconveniences of the "oven-drying" method.

Supplied in convenient size glass containers. Write us for illustrated instruction sheets.

THE DAVISON CHEMICAL CORPORATION

BALTIMORE 3, MARYLAND

Progress through Chemistry



THE IMPROVED
PEATROPHONE

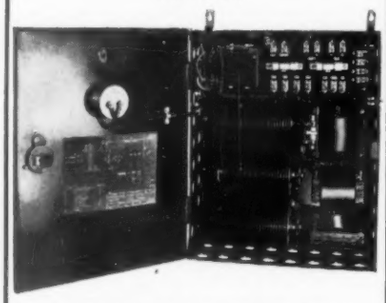
which answers your telephone in your absence and records any message the calling subscriber wishes to leave, is ready for post war production and will be made in several types to suit all operating conditions.

TELEPHONE ANSWERING & RECORDING CORPORATION

(Successor to Peatrophone Corporation)

342 MADISON AVENUE NEW YORK, N. Y.

REPLACE BATTERIES WITH



ELECTROX RECTIFIERS

- Electrox RA Battery Eliminator for all lamp signal and automatic switchboards.
- Provides constant, humless voltage output thru automatic magnetic regulator. No adjustments required. Plug in and forget it. Built to serve indefinitely.
- Individual units or complete sets for telephone, telegraph, signal service, etc.
- Electrox PA-05004 with power-off relay for operator's circuit on magneto switchboards. Low first cost; low operating cost.

KEEP YOUR BATTERIES UP *with*

- Electrox Battery Chargers—for trickle charging telephone batteries, or, (automatic), for exchange batteries.

See your jobber or distributor, or write direct to factory.

Awarded October, 1942

SCHAUER MACHINE CO.

2064 Reading Rd. Cincinnati 2, Ohio

chairman of the Nebraska War Finance Committee, director of the metropolitan utilities district of Omaha, president of the Ak-Sar-Ben Bridge Association, and regent for Creighton University. He reached the Bell System retirement age of 65 last month.

•

Harold Williams is the new manager of the Farmers Mutual Telephone Company of Fruitland, Idaho.

•

K. M. Elmore, manager of the Brighton (Ia.) Telephone Company for the past 31 years, has retired and is succeeded by **Paul Reiner.**

•

Glen Estes, manager of the Llano, Texas, exchange of the United Telephone Company, has announced the consolidation of that company and the rural company that was organized two years ago.

•

Perry Dalrymple has been made manager of the St. John, Kans., exchange of the Western Light & Poker Company. He will operate under district manager **E. R. Luckett.**

•

Fred C. Trower and **C. H. Finn** have purchased the Osage, Okla. properties of the Oklahoma Telephone Company and are now in charge.

•

Floyd Hobbs is the new manager of the Plainfield, Ia. exchange of the Gutler Bremer Telephone Company.

•

Arch MacKinnon, secretary of the New York State Telephone Association, notifies us via his Bulletin No. 9 that the recent group meetings were a huge success with the exception of one district. He was particularly pleased with the discussions on the new toll contracts explained by two officials from the New York Telephone Company that all the members might know in detail of the present contracts. He asked for a big turnout of New York telephone men to the National Convention in Chicago.

•

Marion W. McNary, 38, traffic engineer for the Citizens Telephone Company of Covington, Ky., died August 16 in a hospital following an operation.

•

James C. Horton, Johnstown, Ohio, has been named manager of the Marysville, O., exchange of the United Telephone Company.

J. G. Wray, of J. C. Wray & Company, Chicago, one of the nation's leading telephone engineering firms, is in Puerto Rico working on a proposed contract covering the appraisal of the Puerto Rico Telephone Company, I. T. & T. subsidiary, according to reliable reports. We understand the matter is now under consideration. The Insular Government is proposing to buy the telephone utility from its present owners.

•

Clarence R. Graham, 69, former manager of the Oberlin (O.) Telephone Company and chief of the local fire department for the past 35 years, died recently following a week's illness.

•

R. B. (Doc) Fairly, president of the Southwest Associated Telephone Company, Lubbock, Texas, has been ill but is now convalescing nicely according to Texas reports.

•

Thank you, **Herman E. Hageman,** general manager of the Lorain (Ohio) Telephone Company, for your invitation to attend the District Meeting of the Ohio Independent Telephone Association that met in your city October 1. The preparation of this issue you are now reading prevented us from being present. Other meetings were held in Geneva, Athens and Troy, Ohio.

•

E. E. Ringrose, former manager of the Community Telephone Co., Black River Falls, Wisc., has purchased the exchange at Spring Valley, Wisc. from the Wisconsin Telephone Company. Approval of the sale was made by the Wisconsin commission on Sept. 9 and was to take over the exchange that serves approximately 200 stations on September 21.

•

Ralph Bishop has been named manager of the Lodi, O. exchange succeeding his late brother, **Francis C. Bishop.**

•

John St. C. Werth, until recently in the office of the Inter-Mountain Telephone Co., in Bristol, Tenn., has been made manager of the Johnson City exchange of that company succeeding **R. T. Crabtree**, now manager of the Virginia territory at Wytheville, Va.

•

Philip Zerwas, 76, in 1939-40 president of the Iowa Independent Telephone Association, and for the past 40 years manager of the Manning (Ia.) Telephone Company, died September 6 after an extended illness.

New Unit Training Center At Fort Monmouth

A Unit Training Center to take the place of the deactivated Replacement Training Center at Camp Wood and Camp Edison was established last fortnight at the Eastern Signal Corps Training Center at Fort Monmouth. Colonel Carroll O. Bickelhaupt, commanding officer of the Replacement Training Center, will direct the new Unit Training Center which will train entire units and teams which come to the Eastern Signal Corps Training Center for specific assignments overseas and elsewhere.

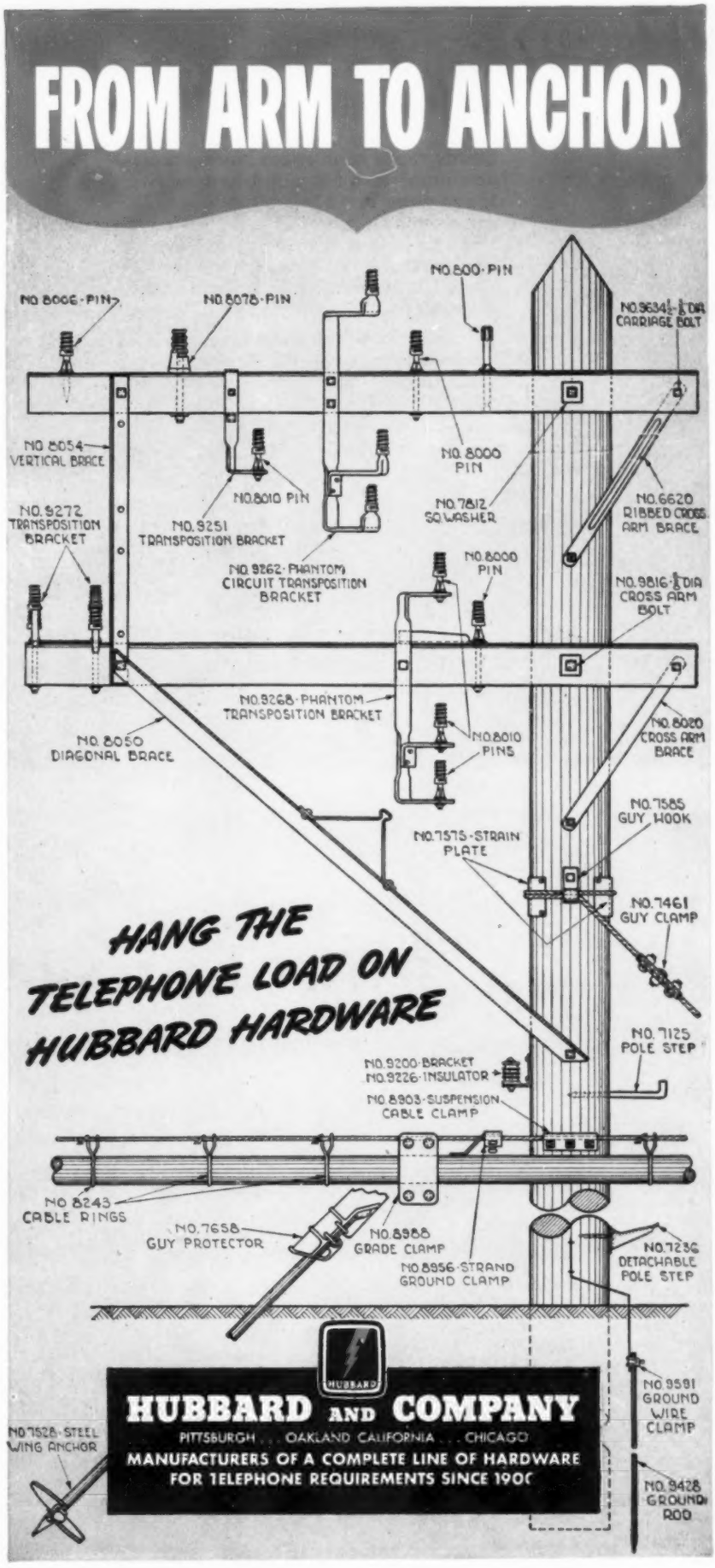
The establishment of the Fort Monmouth UTC gives the Signal Corps two Unit Training Centers—the one at Fort Monmouth and the other at the Central Signal Corps Training Center at Camp Crowder, Missouri. The staff of Col. Bickelhaupt which handled the Replacement Training Center remains unchanged with Col. Lester J. Myers as Executive Officer, Major William F. Atkins as Director of Administration and Personnel, Captain Theodore Pomeroy as Director of Intelligence and Public Relations, Col. Albert Hogle as Director of Training and Captain William A. Humes as Director of Supply.

Signal Corps Making Changes at Holabird Depot

In a move to concentrate scattered facilities and eliminate several existing installations, the Signal Corps has taken over the Holabird Ordnance Depot at Baltimore, Md., and plans to discontinue the Monmouth Signal Depot at Ft. Monmouth, N. J. Although the Signal Corps will not take formal possession of the Holabird Depot until Nov. 1, transfer of equipment and personnel is now under way. The former Ordnance plant has been designated the Holabird Signal Depot.

Originally designed as a Quartermaster Depot, Holabird is government-owned property within the city limits of Baltimore, and is equipped with spacious warehouses, shops, a 200-bed hospital, housing facilities for more than 400 officers and 2,400 enlisted men, and a modern, fire-proof office building. It contains over 1,000,000 feet of inside space and 95 acres of surfaced, lighted and fire-proof office building.

Besides providing concentration of facilities, the Holabird Signal Depot is designed to promote efficient operation as well as to reduce the volume of rail shipments and to effect economies of money and manpower.



LENZ RECEIVER CORDS
LOOK FOR
LENZ
THIS MARK OF QUALITY
Sturdy tinsel conductors having moisture-proof insulation finished with a tough outer braid (all of modern LENZ construction) produces a Receiver Cord of longer life assuring trouble-free service. Write today for Handy Cord Chart listing all types for your convenience.
LENZ Cords, Wires and Cables fit into the War Program perfectly due to their high quality and superior performance. Keep 'em talking with LENZ.
DISTRIBUTORS
LEICH SALES CORP.
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LENZ ELECTRIC MANUFACTURING COMPANY
1751 N. WESTERN AVE., CHICAGO, ILLINOIS, U. S. A.
"IN BUSINESS SINCE 1904"

Telephone Engineer

HANDBOOK TABLES

File—Pole Design
Date—Oct. 15, 1943

Subject: Pole Classification System

Table No. 2 — Minimum Dimensions of Creosoted Southern Pine Poles

Class	1	2	3	4	5	6	7
Min. Top Cir.	27"	25"	23"	21"	19"	17"	15"
Length of Pole (feet)	Minimum Circumference in Inches at Six Feet from the Butt						
16					21.5	19.5	18.0
18			26.5	24.5	22.5	21.0	19.0
20	31.5	29.5	27.5	25.5	23.5	22.0	20.0
22	33.0	31.0	29.0	26.5	24.5	23.0	21.0
25	34.5	32.5	30.0	28.0	26.0	24.0	22.0
30	37.5	35.0	32.5	30.0	28.0	26.0	24.0
35	40.0	37.5	35.0	32.0	30.0	27.5	25.5
40	42.0	39.5	37.0	34.0	31.5	29.0	27.0
45	44.0	41.5	38.5	36.0	33.0	30.5	28.5
50	46.0	43.0	40.0	37.5	34.5	32.0	29.5
55	47.5	44.5	41.5	39.0	36.0	33.5	
60	49.5	46.0	43.0	40.0	37.0	34.5	

Table No. 3 — Minimum Dimensions of Western Red Cedar Poles

Class	1	2	3	4	5	6	7
Min. Top Cir.	27"	25"	23"	21"	19"	17"	15"
Length of Pole (feet)	Minimum Circumference in Inches at Six Feet from the Butt						
16					23.0	21.5	19.5
18			28.5	26.5	24.5	22.5	21.0
20	34.5	32.0	30.0	28.0	25.5	23.5	22.0
22	36.0	33.5	31.5	29.0	27.0	25.0	23.0
25	38.0	35.5	33.0	30.5	28.5	26.0	24.5
30	41.0	38.5	35.5	33.0	30.5	28.5	26.5
35	43.5	41.0	38.0	35.5	32.5	30.5	28.0
40	46.0	43.5	40.5	37.5	34.5	32.0	
45	48.5	45.5	42.5	39.5	36.5		
50	50.5	47.5	44.5	41.0	38.0		
55	52.5	49.5	46.0	42.5	39.5		
60	54.5	51.0	47.5	44.0			

Note: Classes 8, 9, and 10 have minimum top circumferences of 18", 15", and 12", respectively, and no minimum dimensions for pole butt.

Harry J. Huether, Jr. Selected By Ohio Associated Tel. Company

J. T. Carliss

Harry J. Huether, Jr.

A NUMBER of changes in officers and personnel of the Ohio Association Telephone Co., Marion, Ohio, were announced Aug. 3 following a meeting of the company's board of directors. The changes are now effective.

J. T. Carliss, for the past 10 years vice president and general manager, was elevated to the position of chairman of the board of directors and will be succeeded as vice president and general manager by Harry J. Huether Jr. of Erie, Pa., a former vice president of Pennsylvania Telephone Corp., and at present group commercial superintendent of the eastern group of companies owned by General Telephone Corp., under the management of Harry M. Engh at Erie, Pa.

Frank D. McCarthy, now Marion division commercial superintendent located in Marion, was promoted and transferred to Erie, Pa., to assume the position of group commercial superintendent vacated by Mr. Huether.

E. A. Tennant, commercial supervisor in the city of Erie, Pa., was transferred to Marion to assume the position formerly occupied by Mr. McCarthy.

Mr. Carliss will continue to maintain offices in the Marion Telephone building but, due to the nature of his duties as chairman of the board combined with his activities as president of the Ohio Independent Telephone association, will not undertake any of the routine managerial duties of the company.

The board of directors of Ohio Associated Telephone Co. is composed of Harry M. Engh, Erie, Pa., Carl H. McKenzie, Erie, Pa., Donald C. Power, Columbus, O., Carl A. Brandts, Celina, O., Earl T. Smart, Marion, O., H. J. Huether, Jr., Marion, and J. T. Carliss, chairman.

The officers of the company are as follows: H. M. Engh, president; H. J. Huether, Jr., vice president and general manager; Carl H. McKenzie, secretary and treasurer.

The Ohio Associated Telephone Co. operates 57 Ohio exchanges and serves approximately 30,000 subscribers. It serves scattered areas of the state.

JOHN C. LARKIN AND COMPANY

☆

PUBLIC UTILITY CONSULTANTS

AUDITING ACCOUNTING

APPRAISALS

CONTINUING PROPERTY RECORDS

PLANT ACCOUNTING SYSTEMS

☆

JOHN C. LARKIN AND COMPANY

Chamber of Commerce Bldg.
SYRACUSE, NEW YORK

REBRAIDED *Cords* SAVE *Money, Materials!*

To cooperate with your government in its desire to conserve vital materials *plus* your desire for economy of operation are two real reasons why you should send your telephone instrument cords with worn or frayed braid to us for reconditioning.

We are pioneers in rebraiding and you will be agreeably surprised at the quality of our work and at our economical charges.

Our NEW CORDS

Are made of the best grade of materials. They are LONG WEARING and FLEXIBLE, the conductors meet Signal Corps specifications and are guaranteed to satisfy.

Prices and samples of REBRAIDED CORDS or NEW CORDS will be sent on request. Write us today.

COMMERCIAL CORD & SUPPLY CO. Clifton Springs, N. Y.

"*It is estimated* that during the years immediately after the war, $1.5 billion will have to be spent to rehabilitate the AT&T system and to bring it back to the pre-war efficiency level"—*from Wall Street Journal, August 6.*

Add the needed expenditures of 6,800 Independent Telephone Companies—

and you'll get an idea

of the huge **TELEPHONE POSTWAR MARKET**

HERE IN THE UNITED STATES

The Central and South

AMERICAS

present another

FERTILE FIELD

for manufacturers and suppliers of telephone equipment to cultivate for present and postwar business

BONUS Circulation

of 1944 TELEPHONE "BLUE BOOK" & BUYERS' GUIDE

to include

ALL TELEPHONE COMPANIES of the CENTRAL and SOUTH AMERICAS.

★

Start **your sales campaign for this rich trade NOW!**

Supplement your listings in the BUYERS' GUIDE with advertising.

You can develop your share of this business---and---ECONOMICALLY through the advertising columns of TELEPHONE ENGINEER & MANAGEMENT—*The National Telephone Magazine*

The 1944 TELEPHONE "BLUE BOOK" *and* BUYERS' GUIDE

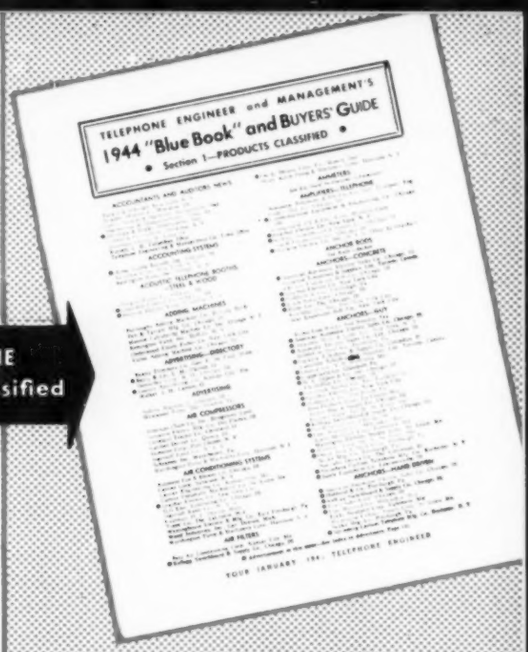
of the

$6,000,000,000 TELEPHONE INDUSTRY

—will be mailed as a part of the January 15, 1944 issue of TELEPHONE ENGINEER & MANAGEMENT. It will be the 9th annual issue of this "Handyman" for purchasers of telephone equipment and supplies . . . and if the paper shortage continues this coming issue will probably have to serve for the duration.

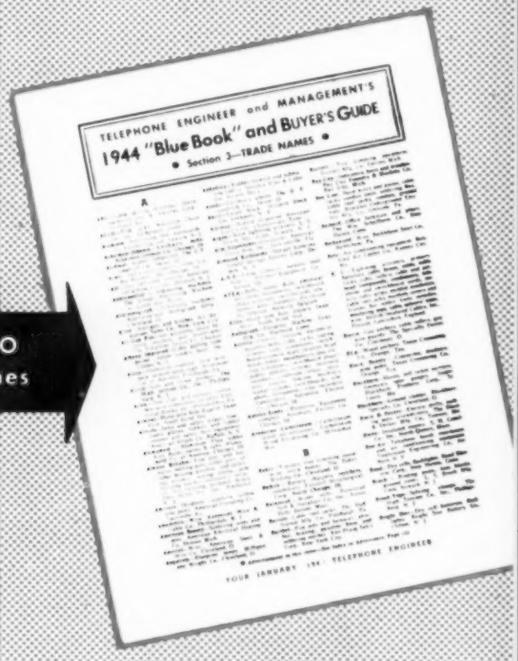
Never before have telephone company executives been so interested in available as well as postwar equipment and supplies, new materials, substitutes, and new sources of supply.

The Telephone "BLUE BOOK" & BUYERS' GUIDE is the only AUTHENTIC and complete directory published of suppliers and manufacturers — plus the products they sell — to the six billion dollar telephone industry.



PART ONE
Products Classified

CLASSIFIED in THREE SECTIONS



PART TWO
Trade Names

Classified in three parts, it lists all telephone equipment, supplies, etc., used in the industry. It lists all trade names, and all manufacturers with their correct names and addresses.

USED BY PURCHASERS IN MANY FIELDS

Proof of the popularity and general demand for the Telephone "BLUE BOOK" & BUYERS GUIDE is borne out by the fact 850 extra copies of the 1943 issue were printed and only 18 copies are unsold. Most of these extra copies were purchased by the Signal Corps of the armed forces, purchasing agencies for foreign countries, communications departments of power and light companies, and industrial users of communications equipment.

PART THREE
Manufacturers' Names

LISTINGS "FREE"

There is no charge for listings in the "BLUE BOOK" & BUYERS' GUIDE. Every manufacturer of equipment used by the telephone industry should receive a Blue Sheet Listing Form before November 1. Fill in and return promptly. If you do not receive your Blue Sheet Listing Form please write for one.

Manufacturers and Suppliers of products applicable to the telephone industry will be wise to advertise their wares in the 1944 Telephone "BLUE BOOK" & BUYERS' GUIDE. It is the only place where your advertisement will always be on the job when specifications are written and buying decisions made.

Advertisers will have attention attracted to their advertisements every time their company name, their products, or their trade names are mentioned in the "BLUE BOOK" & BUYERS' GUIDE.

No advance in advertising rates for this Special issue—
Early reservations for space will earn choice positions—
Make your reservations today.

TELEPHONE ENGINEER & MANAGEMENT

With the Largest PAID Circulation Serving the Telephone Industry

7320 Sheridan Road Chicago 26, Ill.

For Quicker Longer Service

SYLVANIA TUNGSTEN TELEPHONE SWITCHBOARD LAMPS

ACTUAL SIZE

FASTER—Light up in one-fifth second.

BRIGHTER—Maximum end-on candle power. Sharper daylight signals.

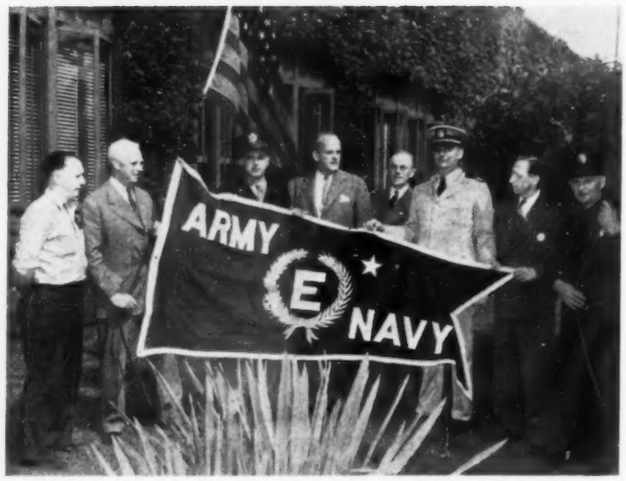
STRONGER—Average life 1,500 hours of high brilliancy. Strong breakage resistant filament. Tight, correctly formed bases.

Available in: CLEAR
NATURAL RUBY*
NATURAL GREEN*

**While present supply lasts*

SYLVANIA
ELECTRIC PRODUCTS INC.
SALEM, MASS.

Formerly Hygrade Sylvania Corporation



The Stromberg-Carlson Company receives renewal of their Army-Navy "E" Award signified by the white star pictured on pennant at right.

Adds Star To "E"

Because of continued excellence in producing communications instruments for the United Nations, the Stromberg-Carlson Company of Rochester, N. Y. has been granted a renewal of its Army-Navy "E" Award for an additional six-months' period by the U. S. Navy Board for Production Awards, Wesley M. Angle, president of the firm, announced today.

This recognition for constant peak production is manifested by a white star affixed to Stromberg-Carlson's Army-Navy "E" Pennant which was awarded the firm last January.

Officials and employees of the Stromberg-Carlson Company paused briefly on Tuesday, August 31, as the new Army-Navy "E" Pennant with its added star was raised at the main plant to mark six months of continued excellent production. Shown with the pennant, from left, are: Thomas Reed, vice-president of Rochester Independent Workers, Local No. 1; Wesley M. Angle, company president, Lt. John T. McMahon, Army Signal Corps; Sidney R. Curtis, general superintendent; Dr. Ray H. Manson, vice-president and general manager; Lt. R. G. Wyld, U.S.N.R.; L. J. Harris, Navy Inspection official; and Sgt. P. J. Christ, plant guard. In accordance with current Army and Navy procedure, no formal ceremony was held to mark the occasion.

Let HOLTZER-CABOT *Engineers*
help solve your ringing problems

MAGNETO
Ringing Machine

- *One Rotating Element Only*
- *No Brushes or Collector Rings*
- *Nothing to Cause Radio Interference*
- *Rigid and Compact*

Designed for exchanges up to 1,500 subscribers. Output—80 volts, 19 cycles, 15 watts. Close voltage regulation. Audible Ringing. Low maintenance cost.

Other and Larger Ringing Sets Available.

For complete information, Write
THE HOLTZER-CABOT ELECTRIC CO.
125 Amory St., Boston, Massachusetts 6161 So. State St., Chicago, Ill.

Foreign Language Permitted On Domestic Phone Lines

A small Independent company recently undertook to stop subscribers from conversing over its lines in German, and the subscribers protested vigorously. The telephone company was under the impression that it was required to stop subscriber from speaking in a foreign tongue over its lines. The USITA was asked by the company to ascertain whether any governing regulations had been issued by federal or military agencies.

They found in inquiry at both the FCC and the War Department that no regulations have been issued and it was stated that in general it is undesirable for telephone companies to attempt to regulate the language used by its subscribers on domestic telephone lines. Any known or suspected subversive activities carried on in a foreign tongue should, of course, be reported promptly to the proper authorities.

11J

14

23D

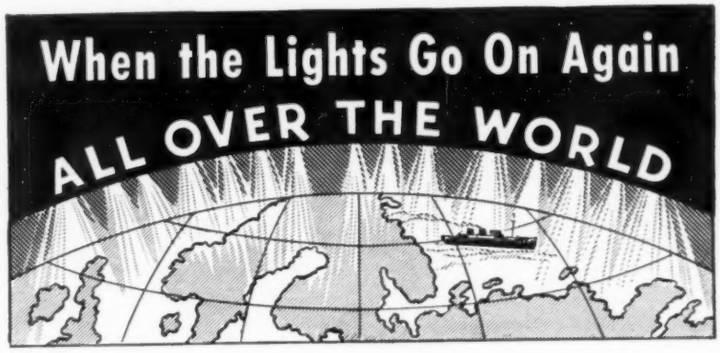
23J

62

34A10

150KJ

150G



GRAY PAY STATIONS

will continue to give profitable 24-hour service in the communication field

Until then, with the necessity for conservation of critical materials, pay stations are essential to carry the peak load of wartime service.

New Gray Pay Stations and repairs to old equipment are available promptly. Regular telephones can be converted to pay station service. Community centers, barracks, drug and department stores, garages, restaurants, etc., are everywhere underserviced. Arrange now to handle this overload, and at the same time realize your fullest revenue. See one of our Agents today.

An Invitation to
MANUFACTURERS and INVENTORS

Have you an idea or invention in electro mechanics which you think will aid the war effort, or which has peace-time application? We'll be glad to develop it with you on a mutually satisfactory basis.

We are planning to add 5 or 6 products to our post-war line. If you have a product or idea which you believe would fit in with our activities, write our President, Mr. W. E. Ditmars, in complete detail. We will consider any practical arrangement.

THE GRAY MANUFACTURING COMPANY

MANUFACTURERS OF TELEPHONE PAY STATIONS SINCE 1891

Plant and General Office, Hartford, Connecticut

AUTHORIZED AGENTS — Automatic Electric Sales Corp. — Graybar Electric Company — Kellogg Switchboard & Supply Company
Leich Sales Corporation — The North Electric Mfg. Co. — Stromberg-Carlson Company — Automatic Electric (Canada) Limited
Northern Electric Co., Ltd.

Automatic Electric Announces Organization Changes

C. S. Cadwell

AUTOMATIC Electric Company has announced that effective immediately Mr. C. S. Cadwell, who was recently elected vice-president, is being placed in charge of all long range promotional activity both of Automatic Electric Company and of its selling affiliate, Automatic Electric Sales Corporation.

The Company has also announced that Mr. T. S. Gary, as vice-president in charge of sales, will take over the administration of all selling activities previously handled by Mr. Cadwell as vice-president and sales manager of Automatic Electric Sales Corporation, including direction of the selling operations of International Automatic Electric Corporation—the Company's export distributor.

Mr. Cadwell, having served in various capacities with Automatic Electric Company and its affiliated companies for almost 25 years, has acquired a broad technical as well as commercial experience in the telephone field. In connection with his new duties he will effect a close correlation between postwar requirements throughout the wire communications field and the technical research and product development activities of Automatic Electric Laboratories, Inc., the research and development organization for Automatic Electric Company.

T. S. Gary

During the past six years, Mr. Cadwell has had personal direction of the Company's sales operations, and has thereby gained a first hand knowledge of the detail requirements and problems of customers in both the telephone operating and industrial fields. His new position will now enable him to bring even more strongly to focus on these problems the long experience of the Automatic Electric engineering staff, and the world-wide technical resources of the Company's parent and affiliated organizations. Mr. Cadwell will continue his work with the various industry advisory bodies in which he has been active.

Mr. T. S. Gary, who is vice-president both of Automatic Electric Company and Automatic Electric Sales Corporation, is well known throughout the telephone field. A son of Hunter L. Gary, who with his father Theodore Gary, have been closely associated with the Independent telephone movement for over forty years, he brings to his new assignment a broad range of experience both in manufacturing and selling operations. Mr Gary was educated at Yale University and Northwestern University School of Commerce. His first direct contact with the telephone business was in the office of Theodore Gary And Company, Kansas City. He later moved to Chicago as assistant to the chairman of the Board, and soon thereafter assumed supervisory duties in connection with the many Independent operating companies of the Telep-

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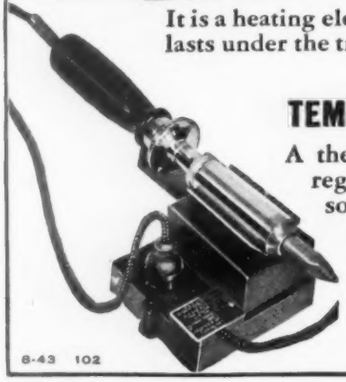
It is a heating element of enduring construction that lasts under the trying conditions of industrial usage.



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"Major General W. H. Harrison, Chief, Procurement and Distribution Service, Office of the Chief Signal Officer, (right) pauses to inspect a cord winding machine, during a recent tour of the Kellogg Switchboard and Supply Company plant. Pictured with General Harrison are (left to right) Mrs. Sophie Korbecki, of Kellogg's Insulating Department, Major H. E. Billington, U. S. Army Signal Corps, and J. H. Kellogg, secretary and acting works manager. Major Billington was formerly executive vice-president of the Kellogg Co."

phone Bond and Share group.

In 1935, Mr. Gary was made vice president and assistant to the sales manager of the Automatic Electric Sales organization, where he gained an intimate knowledge of the problems involved in serving the Company's customers. More recently, he has acted as liaison officer between the sales and factory operations and the management, as well as representing the management in the field in collaboration with the field selling force. Mr. Gary now holds office as vice-president or director, or both, in several of the domestic and foreign companies of the Theodore Gary group.

Leich Reprints Folder By Popular Request

Recently the Leich Electric Company printed a folder for distribution among its employees. So well was this piece received that extra copies were soon exhausted.

To comply with the many requests received from the telephone operating field, Leich has reprinted the folder in their advertisements shown on pages 48, 49, 50 and 51 of this issue.

Additional copies may be obtained by writing Leich Electric Company, 427 W. Randolph St., Chicago, Ill.

—•—

Ten South American countries have radiotelephone service with the United States.

Greater Washington has more than 460,000 telephones, five times as many as it had on Armistice Day in 1918.

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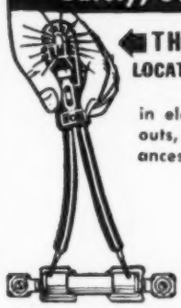

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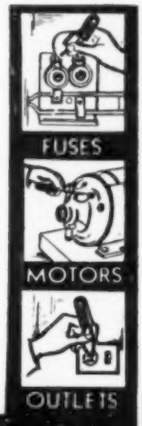
in electric circuits, fuses, cut-outs, motors, radios, appliances, etc.



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Stromberg Carlson No. 69 Protector rack with carbons and fuses 20 lines per bank @	3.00
Kellogg No. 103 1-M. F. or No. 62-M F. Condensers @	.35
Kellogg No. 79 Common battery Ind. Coils @	.45
Dean 4 Party Push Button Swbd. Key with Ringing and Listening key @	2.75
Kellogg No. 404 Steel Bell boxes with 16-33-50 or 66 Cycle harmonic ringers and Booster Coil @	4.25
Western Elec. or Kellogg New composition Receiver shells and Caps @	.45
Kellogg, Stromberg, Dean, Monarch, Leich or W. E. Mouthpieces @	.08
Western Elec. No. 1078 Fuse rack with Fuses 40-50 and 60 lines @	8.00
Kellogg No. 115 Desk type Grabaphones with 3 Cond. cord wired for use with standard signal sets @	5.00
Kellogg or Dean 100 ohm drop coils @	.35
Kellogg No. 729 Oak C. B. Wood hotel sets with straight line ringer & Booster coil @	6.75

REBUILT ELECTRIC EQUIPMENT CO.
1704 West 21st Place
Chicago 8, Ill.

Bell Laboratories Has A New Synthetic Rubber

A new synthetic rubber, called Paracon, has been developed by the Bell Telephone Laboratories. The new material looks and feels like ordinary rubber, resembles it fairly closely in mechanical properties, and has important advantages for certain purposes. It also has certain limitations.

For example, Paracon has a high resistance to damage by oil, and resists heat, light and oxidation better than rubber. These properties will make it valuable in the aircraft field for instance. It does not, however, resist steam, acids or alkalies as well as rubber does.

Paracon can be worked with ordinary rubber machinery. In its raw state it is highly plastic, and is well adapted to molding into intricate shapes. It can be used in making rubberized fabrics, and might be used for making inner tubes. However its special fitness for other applications and its present limited production rule that possibility out of immediate consideration.

The synethetic rubber has been developed by Bell Telephone Laboratories as a by-product of research in insulating materials. The formula has been made available to some chemical manufacturing companies for commercial development. One of the companies is now producing Paracon on a semi-commercial scale, and its use is expected to relieve the rubber shortage in certain important fields.

Phone Sale Approved

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Finished Cedar Poles
VALENTINE CLARK CORPORATION
St. Paul, Minn.

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SPRINGFIELD, ILLINOIS

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WANTED—Man to repair and rewire Magneto Telephones. For Factory in Chicago. Write Box 8306, c/o TELEPHONE ENGINEER.

WANTED—Telephone Company with multi-exchange and toll system operation serving 10,000 stations in Kentucky needs a District Plant Superintendent. State salary expected, qualifications and draft status first writing. Write Box 8308, TELEPHONE ENGINEER.

POSITION WANTED—As Plant Superintendent, Manager or District Manager, by man of 20 years all around experience in plant engineering, construction and supervision. Manager, commercial and traffic experience. 40 years old, draft 3AH, married, two children 14 and 15. Sober and reliable. Permanent position only. Write Box No. 8309, c/o TELEPHONE ENGINEER.

The Clearing House

For the convenience of readers of Telephone Engineer

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L. B. Haigh

As an indication of how the scarcity of certain materials may bring forth a better article, the Federal Telephone and Radio Corp. shows a small magneto generator that can be used as an example. The old model weighed approximately 2.4 lbs. and contained critical cobalt steel and aluminum. The new model, after considerable design engineering and analysis weighs only 2 lbs. and does not contain any aluminum, or cobalt steel in appreciable quantities. In fact, the amount of cobalt, a scarce material, has been reduced, per unit, by approximately one-seventh. The new model generator also has a better appearance and is somewhat simpler to manufacture. It is pictured in the hands of L. B. Haigh, Telephone Chief Engineer of the Federal Telephone and Radio Corp.

Heads New Eastern Office

With the recent establishment of an eastern office Kellogg Switchboard and Supply Company's representation in that area has been considerably augmented.

This latest Kellogg office is located at 1616 Walnut Street, Room 1602, Philadelphia 3, Pennsylvania.

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The first demonstration of two-way radio telephone communication between an airplane in flight and ground stations was made 25 years ago at Langley Field, Va., by engineers of the Western Electric Company, manufacturing unit of the Bell System, three months after the Army Signal Corps gave them the job of providing "ears and voices" for America's World War I fighting planes.

AN ANSWER!

The minute and hour in which President Lincoln was assassinated.

ARE YOU AN INDEPENDENT TELEPHONE PIONEER?

Apply today to J. K. Johnston, secretary, Lemcke Building—Indianapolis, Indiana.

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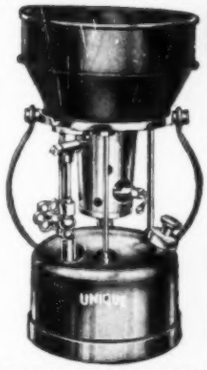

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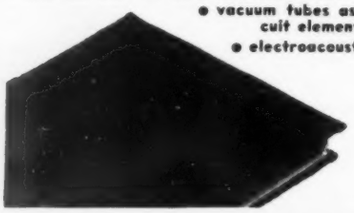

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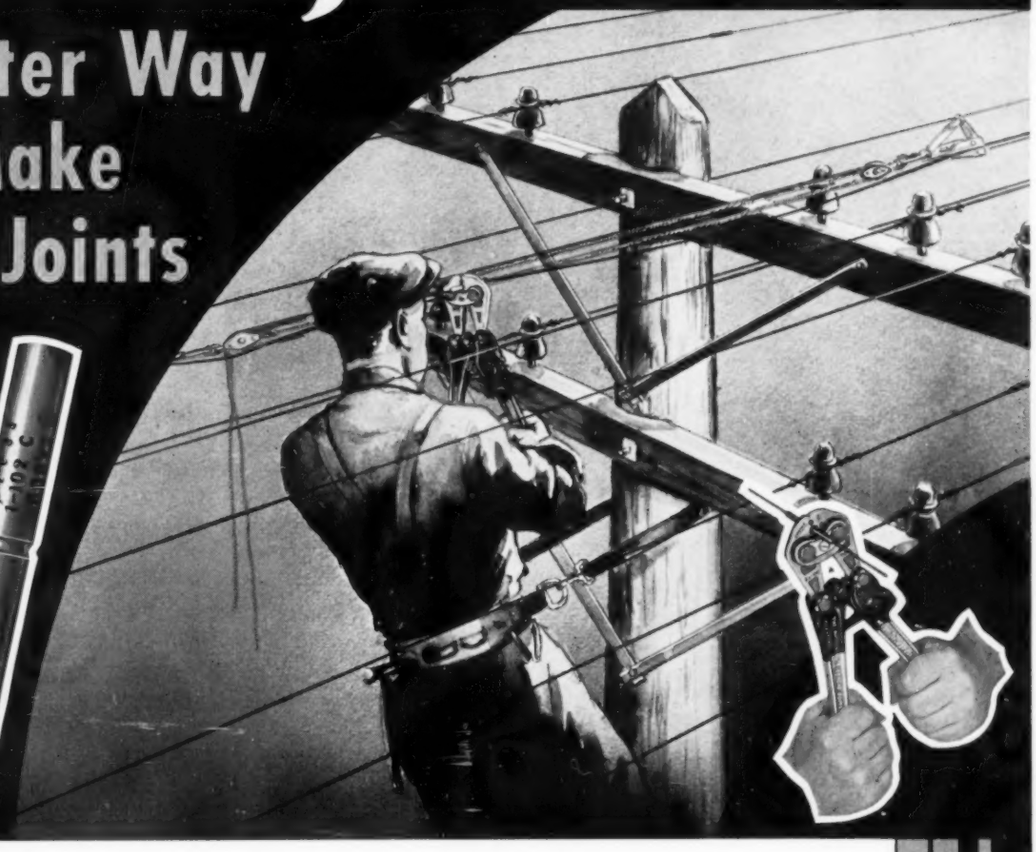

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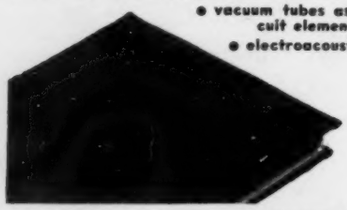

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